Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Amendment of Part 90 of the Commission's Rules and Policies for Applications and Licensing of Low Power Operations in the Private Land Mobile Radio 450-470 MHz Band	)	WT Docket No. 01-146
	)	*RM-9966*
	)	

REPORT AND ORDER

Adopted: February 14,2003 **Released: March 11,2003**

By the Commission:

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1 INTRODUCTION

1. On July 24, 2001, the Commission released a ***Notice of Proposed Rule Making (NPRM)***, seeking comment on proposed revisions to the Commission's rules and policies for low power, *i.e.*, two watt operations in the 450-470 MHr band.[1] The ***NPRM*** was issued in response to a petition for rulemaking filed on September 11, 2000, by the Land Mobile Communications Council (LMCC).[2] Generally, the *NPRM*. which considered adopting the LMCC's recommendations, proposed to create five groups of channels for licensed operations, to accommodate the varying needs of low power users. The *NPRM* further proposed power increases for certain frequencies, and the establishment of a band for non-coordinated itinerant services.

2. This *Report and Order* implements many of the proposals set forth in the ***NPRM*** and other changes related to low power operations in the private land mobile radio (PLMR) 450-470 MHr band. A summary of the approach adopted may be viewed in the chart entitled "The Low Power Pool [450-470 MHz]" accompanying paragraph 19, *infra*.

11. EXECUTIVE SUMMARY

3. In this *Report and Order*. we:

- Designate forty-nine 12.5 kHz 450-470 *MHr* Industrial/Business channel pairs and one unpaired frequency for low power coordinated use. Thirty-nine of the channel pairs and the unpaired frequency will be available for full power at least 50 miles outside of the top 100 urban areas. These channels will be referred to as "Group A."

- Raise power limits for baselfixed operations on the Group **A** channels to 20 watts effective radiated power.

- Designate ten 12.5 kHz 450-470 MHz channel pairs for low power non-voice coordinated use nationwide, with voice operations allowed on a secondary basis. These channels will be referred to as "Group B."

- Designate twenty-one 12.5 kHz 450-470 MHz channel pairs and four unpaired frequencies for low power non-coordinated use nationwide. These channels will be referred to as "Group C." Although the majority of these channels are immediately available, ten Group C frequencies will become available only after completion of the medical telemetry migration deadline.[3]

- Convert power limits for mobile opcrations on the Group A, B and C frequencies to ***6*** watts effective radiated power.

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[1] Amendment of Part 90 of the Commission's Rules and Policies for Applications and Licensing of Low Power Operations in the Private Land Mobile Radio 450-470 MHz Band. W T **Docket** No. 01-146, *Notice of Proposed **Rule Making,*** 16 FCC Rcd 14946 (2001).

[2] The LMCC is a non-profit association of organizations representing many users of land mobile radio systems, providers of land mobile services. and manufacturers of land mobile radio equipment. LMCC's membership includes all of the Commission's certified Part 90 frequency coordinators.

[3] *See* para. 60, *infra*.

- Designate five 12.5 kHz 450-470 MHz channel pairs for low power coordinated use, reserved for central station alarm operations, as under current rules. These channels will be referred to as "Group D."

- Designate fourteen 12.5 kHz channels pairs for low power use in the Public Safety Pool. These channels will be referred to as the "Public Safety Group."

- Grandfather high power operations currently licensed on the low power channels.

We believe that the plan we adopt today will accommodate a broad range of potential low power users while maximizing efficient and flexible use of the band.

III. BACKGROUND

4. The Commission has permitted PLMR users in the 450-470 MHz band to be licensed for low power operations—on frequencies 12.5 kHz offset from regularly assignable 25 kHz frequencies (often referred to as "offset channels")—for almost thirty years.[4] During this time, these offset channels have been extensively used for industrialibusiness communication that can be accomplished using low power transmissions. Such operations include medical telemetry, remote operation of heavy machinery, meter reading, wireless data communication, and alarm messaging.' However, in 1995 the Commission adopted a new band plan which converted the 12.5 kHz offset channels into regularly assignable PLMR channels for high power operations on a primary basis.[6] The Commission's goal in making this conversion was to promote spectral efficiency in the PLMR band.

5. Nonetheless, the Commission has continued to recognize a need for low power operations, and in adopting the 1995 plan, it provided Part 90 frequency coordinators with the authority to identify and reserve specific 12.5 kHz channels for low power use.' In light of their displacement by high power operations, the Commission gave existing low power licensees the option of increasing power on their licensed channel. unless the Commission-certified PLMR frequency coordinators designated such channel

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[4] The Conimission first authorized the use of offset frequencies in the Business Radio Service in 1973. *See* Amendment of Parts 2 and 91 of the Commission's Rules to Permit Medical Telemetry and Other Low Power Uses of Offset Frequencies in the Business Radio Service, Docket No. 19478, ***First Reporr and Order.*** 41 FCC 2d 8 (1973). In 1981, the use ***of*** offset frequencies was expanded to all eligibles in the PLMR 450-470 MHz band. ***See*** Amendment of Subpart **D** of Part 90 of the Commission's Rules and Regulations to Permit the Use of 12.5 kHz Offset Assignments in the 450-470 MHz Band in the Private Land Mobile Radio Services, PR Docker No. 80-605, HM-3569. ***Reporr andorder.*** 87 FCC 2d 647 (1981).

[5] *See* Replacement of Part 90 by Part 88 to Revise the Private Land Mobile Radio Services and Modify the Policies Governing Them and Examination of Exclusivity and Frequency Assignment Policies of the Private Land Mobile Services. PR Docket No. 92-235. ***Second Report and Order,*** 12 FCC Rcd 14307, 14338-39 ¶ 60 (1997) (***Refarming Second R&O***).

[6] Replacement of Part 90 by Parr 88 to Revise the Private Land Mobile Radio Services and Modify the Policies Governing Them and Examination of Exclusivity and Frequency Assignment Policies of the Private Land Mobile Services, PR Docket No. 92-235, ***Report und Order and Further Norice of Proposed Rule Making,*** 10 FCC Rcd 10076. 10110-11 ¶¶ ***62-65*** (1995) (*Refarming R&O*). Former offset channels are not regularly assignable for high power operations if designated by the frequency coordinators for low power use. See para. ***5***, ***infra***.

Refarming R&O, 10 FCC Rcd at 10110 ¶ 64; 47 C.F.R. § 90.267(a)

tor low power use.[8] The Commission also decided that low power licensees that elected to remain on, or move to, a coordinator-designated low power channel would be elevated to primary status upon providing their station coordinates to the Commission.[9] Before the 1995 band plan rules implementation took effect, however. the Commission granted a request to cease or "freeze" the acceptance of high power applications for the former 12.5 kHz offset channels." The Commission adopted the freeze in order to prevent high power applicants from interfering with existing low power operations until the frequency coordinators had devcloped a low power channel plan"

6. In March 1997, the Commission consolidated the twenty PLMR services below 512 **MHz,** including the low power channels, into two pools–a Public Safety Pool and an Industrial/Business Pool." The Commission confirmed the importance of low power channels and charged the frequency coordinators with development of a consensus plan that would identify specific frequencies for low power operatioiis in the two pools." In rcsponse, the LMCC filed a Low Power Consensus Plan in June 1997[14] that identified specific frequencies for low power use. However, the plan proposed several provisions that could not be implemented without changes to the Commission's Rules. In August 1997, the LMCC refiled a portion of the Consensus Plan that did not require rule changes." This revised "Low Power Plan" listed ninety Industrial/Business Pool channel pairs and fourteen Public Safety Pool channel pairs to be designated for low power use. The Commission, however, deferred a decision on acceptance of the Low Power Plan until it resolved the issue of possible interference to medical telemetry devices using these frequencies.[16]

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[8] *Reforming R&O*, 10 FCC Rcd at 10111 ¶ 65. Low power licensees that elected to stay on their current channel could obtain primary status by raising output power, supplying station coordinates, and providing justification to raise output power. ***Id.***

[9] *Id.*

[10] ***See*** Freeze on the Filing of High Power Applications for 12.5 kHz Offset Channels in the 450-470 MHz Band, DA 95-1771, *Public Notice*, 10 FCC Rcd 9995 (1995). Under the "old" rules, users of the low power offset channels were permitted 2 watts output power in all services except the Special Industrial Radio Service, in which entities were eligible to be licensed at an effective radiated power of up to 100 watts.

[11] *Id* The freeze also allowed the Commission to consider the potential for interference to medical telemetry devices. which ultimately led to the establishment of specific channels for such use. ***See*** Amendment of Pam 2 and 95 of the Commission's Rules to Create a Wireless Medical Telemetry Service, ET Docker 99-255, ***Reporr and Order***, 15 FCC Rcd 11206 (2000) (*Medical Telemetry R&O*).

[12] *Refarming Second R&O*, 12 FCC Rcdat 14315-14319 ¶¶ 15-21

[13] *Id.* at 14340-41 ¶ 63

[14] *See* Letter from Larry Miller. President. LMCC. to Daniel Phythyon, Acting Chief, Wireless Telecommunications Bureau, FCC, dated June 4. 1997 (Consensus Plan).

[15] See Letter from Larry Miller, President, LMCC. to Daniel Phyhyon, Acting Chief, Wireless Telecommunications Bureau, FCC, dared August 21, 1997 (Low Power Plan).

[16] *See* Replacemem of Pan **90** by Pan 88 to Revise rhe Private Land Mobile Radio Services and Modify the Policies Governing Them and Examination of Exclusivity and Frequency Assignment Policies of the Private Land Mobile Services. PR Docket No. 92-235, ***Second Memorandum Opinion and Order.*** 14 FCC Rcd 8642, 8660 ¶ 37 (1999) (*Refarming Second MO&O*). *See also* Office Of Engineering And Technology Requests Information On Medical Telemetry Equipment Operating in the 450-460 **MFlz** Band. *Public* ***Norice.*** 15 FCC Rcd 8324 (1999).

7. On June 8, 2000. the Commission adopted a ***Reporr and Order.*** establishing the Wireless Medical Telemetry Service (WMTS) and allocating fourteen megahertz of spectrum in the 608-614 MHz, 1395-1400 MHz and 1427-1429.5 MHz bands for medical telemetry use." The Commission's goal in that proceeding was to provide spectrum in which medical telemetry equipment can operate without intcrference, and to encouragc medical telemetry users to eventually migrate out of the current bands. including the 450-470 MHz band." On June 29, 2000. the Wireless Telecommunications Bureau (WTB) announced the acceptance of the LMCC's Low Power Plan, which did not require rule changes! Thereafter, the LMCC filed a Petition for Rule Making, seeking certain revisions to the Commission's rules that were necessary for the adoption of its Consensus Plan. In response to the LMCC's request, the Commission released the *NPRM* in this proceeding seeking comment on the LMCC's proposed revisions.

IV. DISCUSSION

X. Section 90.267 of the Commission's Rules provides that any regularly assignable channel in the 450-470 MHz PLMR hand may be designated by the frequency coordinators as a low power channel in a defined geographic area." Low power stations authorized under this Section are limited to two (2) watts output power." The Low Power Plan submitted by the coordinators and accepted by WTB designated 104 "12.5 kHz offset" channel pairs (hereinafter "channel pairs") for low power operation nationwide–ninety in the Industrial/Business Pool and fourteen in the Public Safety Pool.** Additionally, the LMCC designated the 6.25 kHz "drop in" channels directly adjacent to each designated 12.5 kHz channel.[23] In the *NPRM,* the Conmission tentatively concluded that a wide variety of low power operations deployed in the PLMK community require rules that permit different types of operations on the

[17] ***Medical Telemetry*** *R&O*, 15 FCC Rcd at 11206. Based on the limited usage ofthe 450-460 MHz band for medical telemetry. the commission found that the freeze on high-power land mobile applications in the 450-460 MHr band should be liked and it stated that the Wireless Telecommunications Bureau would issue a public notice to lift the freeze in this band "in thc near future." Id at 11227 ¶ 63. We note that the spectrum allocation for WMTS was changed from 1429-1432 MHz to 1427-1429.5 MHz. ***See*** Reallocation ofthe 216-220 MHz, 1390-1392 MHz, 1427-1429 MHz, 1429-1432 **Mtlr.** 1432-1435 MHz, 1670-1675 MHz, and 2385-2390 MHz Government Transfer Bands, ET Docket No. 00-221, ***Reporr and Order and Memorandum Opinion*** *und* ***Order,*** 17 FCC Rcd 368, 392 ¶ 54 (2002).

[18] ***Id*** at 11225 ¶ 57. The Commission noted that medical telemetry has no legal protection from interference in the current hands. including the 450.470 MHr hand, because it is authorized on a secondary basis; however, "the fact remains that the Commission has had to take steps to protect medical telemetry from interference because it is used to prolect safety of life." *Id*.

[19] *See* Wireless Telecommunications Bureau Accepts LMCC Low Power Plan for Part 90 450-470 MHz Band, *Public Notice*, 15 FCC Rcd 11598 (2000) **(Lon,** *Power Public* ***Norice).*** In a companion public notice released the same day. WTB announced it was lifting the freeze. ***See*** Freeze on the Filing of High Power Applications for 12.5 kHz Offset Channels in the 450460 MHz Band to be liked January 29, 2001, ***Public Norice,*** 15 FCC Rcd 9996 (2000). The freeze on the 460-470 MHr segment of the hand. however (where most medical telemetry operations are located). remains in cffccr until October 2003. *Medical Telemetry R&O,* 15 FCC Rcd at 11227-28 ¶ 65.

[20] *See* 47 C F.R. § 90.267. The regularly assignable channels are listed in Subpart B (Public Safety Radio **Pool)** and Subpart C (Industrial/Business Radio Pool) of Part 90. 47 C.F.K. § 90.267(a).

[21] 47 C.F.R. § 90.267(a)(3)

[22] Consensus Plan at 2

[23] *Id*

low power channels.[24] Hence, the Conmission proposed the division of the 104 channel pairs into groups with different technical and coordination requirements."

A. Power Limitations (ERP vs. TPO)

9. Section 90.267 of the Commission's Rules limits the maximum power of low power stations to 2 watts transmitter output power (TPO).[26] In the *NPRM,* the Commission proposed to retain the current TPO standard for Industrial/Business and Public Safety mobile units, and to convert the power limitation for certain baseifiued units from TPO to effective radiated power (ERP).[27] However, for the reasons discussed below, we shall employ the ERP standard for Industrial/Business Groups A, B and C, and the Public Safety Group. Because we believe that Group D presents unique circumstances justifying a different standard, we will continue to employ the TPO standard thereon.

1. Mobile Units

10. In the *NPRM,* the Commission expressed concern that a conversion from TPO to ERP could render many existing mobile units non-compliant.[28] While some commenters concurred with the Commission's proposal,[29] the LMCC and the Personal Communications Industry Association disagreed, asserting that the continued use of TPO as a measurement of maximum power would significantly limit the availability of spectrum, decrease the effectiveness of the frequency coordination process, and lead to mis-utilization of the band."

11. *Industrial/Business Mobile Units.* As an alternative, the LMCC proposes to limit the maximum power of Industrial/Business mobile units in terms of both 5 watts TPO and 6 watts ERP.[31] The LMCC maintains that this dual rule will permit each user to decide whether the user wishes to meet the maximum power limitation through the use of higher gain antennas for higher power radios, while at the same time maintaining the integrity and purpose of the allocation." PCIA agrees, asserting that this

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[24] *See NPRM,* 16 FCC Rcd at 14951-2 ¶¶ 8, 12

[25] *Id.* at 14952 ¶ 12

[26] 47 C.F.R. § 90.267(a)(3). The Commission has historically limited the power oftransmitters in the private land mobile service using TPO. *See* Amendment of Pan 89.91 and 93 ofthe Commission's Rules and Regulationsto Eliminate the Required Annual Measurement of Transmitter Power, Frequency and Modulation, and to Specify Transminer Power in Terns of Output Power, Docket No, 20665, *Report and Order,* 60 FCC 2d 591 (1976).

[27] *NPRM,* 16 FCC Rcd at 14951 ¶ 10

[28] *Id.*

[29] *See* Comments of the American Water Works Association (AWWA) at 3 (AWWA Comments); Comments of Dataradio COR, Ltd. (Dataradio) at 5 (Dataradio Comments).

[30] Comments of LMCC at 5 (LMCC Commentsl: Comments of the Personal Communications Industry Association (PCIA) at 2 (PCIA Comments).

[31] LMCC Commcnts at 6. 8, 10

[32] *Id*

approach would yield greater flexibility by allowing decisions to be based on specific needs and individual entities' available resources.[33]

12. We believe, however, that the dual rule proposed by the LMCC may lead to confusion as to the applicability of a particular standard, and would serve no meaningful purpose. TPO simply describes the transmitter power without factoring other components of a radio system, such as the antenna and any cables used to connect the transmitter thereto. In contrast, ERP describes the power of the entire radio system by measuring the TPO plus the antenna gain minus any loss factors. Therefore, if power limits are set in terms of ERP, setting an additional TPO limit serves no meaningful purpose. For example, if a mobile unit is limited to 6 watts ERP, we would not be concerned about the TPO used to achieve this 6 watt ERP limit. Accordingly. we conclude that power limits should be described in terms of either TPO or ERP, not both.

13. The question then turns to which standard, TPO or ERP, is the most appropriate for the instant service. As stated above, in the ***NPRM.*** the Commission initially proposed to retain power limits in terms of TPO because it believed that TPO was more practical for this service, and a conversion to ERP would adversely impact mobile units already in service.[34] However, after reviewing the comments on this issue and upon further consideration, we conclude that power limits for Industrial/Business mobile units should be expressed in terms of ERP for Groups A, **B** and C.[35] We note that the Commission generally favors ERP limits over TPO limits because, as described above, ERP more accurately defines the actual operating power of the radio.[36] Further, we are no longer concerned that a change in the policy from TPO to ERP for mobile units would render incumbent users non-compliant since, as the LMCC points out, in most cases, **6** watts ERP will be the maximum achievable ERP with a mobile unit operating at *2* watt TPO."[37] Consequently, we believe that changing the limitation from 2 watts TPO to 6 watts ERP for mobile units will essentially be a conversion from TPO to ERP without actually decreasing or increasing the current limitation. In addition. we agree with commenters that ERP calculations for mobile units will enhance the effectiveness of the frequency coordination process, thereby increasing the availability of spectrum.'* Furthermore, ERP is more suitable for a coordinated/licensed service such as the low power service at issue herein."[39] Accordingly, we will utilize ERP limits for Industrial/Business mobile units in Groups **A,** Band C.

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[33] PCIA Comments at *2.*

[34] ***NPRM,*** 16 FCC Rcd at 149517 10

[35] As previously stated, the standard for Group **D** will continue to be expressed in terms of TPO. ***See*** para. *9. supra*

[36] ***See*** In the Matter of 1998 Biennial Review-47 C.F.R. Pan 90-Private Land Mobile Radio Services, WT Docket No. ***98-182, Memurandurn Opinion and Order and Second Reporr and Order.*** 17 FCC Rcd 9830,9840 ¶ 23 (2002) ***(1VYY Biennial Review MO&O and Second R&O).***

[37] LMCC Comments at 5. stating that the maximum ERP achievable with a 2 watt TPO mobile unit and a gain antenna rypically available on the marker ar the present time is 6 watts ERP

[38] LMCC Comment?at 5. **PCIA** Comments at 2.

[39] *See 1998 Biennial Review,* 17 FCC Rcd at 9840 ¶ 23. By comparison, the Conmission maintained ihe TPO limit for the Multi-Use Radio Service (MURS) because MURS is a non-coordinated service licensed by rule. *Id.*

14. *Public Safety Mobile Units.* Although the LMCC supports retaining TPO as the standard for limiting Public Safety mobile units,"[40] after reviewing the comments and upon further reflection, we now decide to employ the ERP standard for Public Safety mobile units. As we noted above, the Commission has stated a general preference for the ERP standard. We also note that the rationale for utilizing the ERP standard for Industrial/Business mobile units is likewise applicable to Public Safety units. Accordingly, we will likewise utilize ERP limits for Public Safety mobile units.

2. Base/Fixed Stations (20 Watts)

15. In the *NPRM,* the Commission discussed the possibility of raising the power limits for certain baseifixed stations to a "slightly" higher level of 20 watts.[41] The Commission tentatively concluded that if the power level is raised for certain baseifixed stations, such stations should be limited in terms of ERP rather than TPO.[42] The Commission indicated that a conversion to ERP for these "slightly" higher power baseifixed stations did not raise the same concerns as a conversion for mobile units.[43] In addition, the Commission expressed concern that a 20-watt TPO limit for baseifixed stations would be inappropriate for "low power channels" because significantly higher-gain antennas can be installed for baseifixed operations. Commenters who discussed this issue agreed with the Commission's tentative conclusion.[44] Accordingly, we conclude that power limits for baseifixed stations will be established in terms of ERP.

B. Site Coordinates for Fixed Operations

16. In the *NPRM,* thc Commission noted that it had eliminated the requirement that stations on designated low power channels in the 450-470 MHz band be licensed only as mobiles.[45] Therefore. the Commission clarified that low power operations may, but are not required to, supply their station coordinates and be licensed on a site-specific basis.[46] The Commission sought comment on its tentative conclusion.[47]

17. In its comments. the LMCC proposes to require applicants for low power fixed operations to specify a set of coordinates for the location thereof. LMCC asserts that such information is crucial to proper frequency coordination and interference reduction.[48] Nonetheless, LMCC's proposal would

[40] LMCC Comments at 14.

[41] *NPRM,* 16 FCC Rcd at 14952 ¶ 11

[42] *Id.*

[43] *Id*

[44] Dataradio Comments at 5; Comments of the Toro Company (Toro) at 5 (Toro Comments).

[45] *NPRM,* 16 FCC Rcd at 14959 ¶ 27. *See Refarming Second MO&O,* 14 FCC Rcd at 8660 ¶ 36; In the Maner of Replacement of Part 90 By Part 88 to Revise the Private Land Mobile Radio Services and Modify the Policies Governing Them and Examination of Exclusivity and Frequency Assignment Policies of the Private Land Mobile Services, FCC 00-439. *Fifth Memorandum Opinion and Order.* 16 FCC Rcd 416,420 ¶ 13 (2000). *(Refarming Fifth MO&O)*

[46] *NPRM,* 16 FCC Rcd at I4959 ¶ *21*

[47] *Id*

[48] LMCC Comments at 11

continue to exempt central station alarm (CSA) licensees, noting that because such entities operate numerous fixed sites throughout their service area, providing coordinates for every fixed site would be an administrative burden and could compromise the safety of protected premises.[49] We agree that coordinate data for fixed stations aid the frequency coordination process. However, we believe that an exemption from the requirement to provide the coordinates of every fixed station should not be limited to CSA licensees. That is, we believe that other licensees with infrastructure similar to that of CSA licensees would be similarly burdened and should likewise be exempt from providing coordinates for every fixed site. Therefore. we will continue to allow low power licensees to license multiple fixed sites as mobile units. provided that they supply areas of operation for these multiple fixed sites. In view of LMCC's statement that site coordinates enhance the frequency coordination process, we will continue to allow liccnsees who would like coordinators lo consider their fixed operations in recommending frequencies for other applicants lo provide such coordinates.

18. In a related matter, we note that in the past, CSA licensees have expressed concern that designating their operations as fixed would subordinate their status relative to land mobile operations.[50] This concern is apparently based on the language of Section 90.261(a) of our rules, which states that "[flrequencies in the 450-470 MHz band as listed in § 90.20(c)(3) and § 90.35(b)(3) may be assigned to all eligibles for tixed use on a secondary basis to land mobile operations."" However, the Commission has clarified that Section 90.261 is distinct from Section 90.267, which allows fixed operations in the 450-470 Mliz band at power substantially greater than two watts under certain conditions.[52] The Commission has further indicated that stations operating pursuant to Section 90.267 are not subject to the conditions specified under Section 90.261 and vice-versa." Therefore, we take this opportunity to clarify that unless otherwise specified, fixed stations operating on the low power frequencies discussed herein are co-primary to land mobile operations.

C. Low Power Pool (450-470 MHz Band)

19. To address the diversity of low power operations. in the *NPRM* the Commission tentatively agreed with the LMCC's proposal to divide the designated low power channel pairs into five groups.[54] The following chart summarizes the approach we adopt herein for the low power channels in the 450-470 MHzband.

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[49] *Id* at I2

[50] *See* Replacement of Part 90 by Pan 88 to Revise the Private Land Mohilc Radio Services and Modify the Policies Governing Them, *Sixth Memorandum Opinion and Order.* 16 FCC Rcd 11487, 11488 ¶ 3 (2001) (*Refarming Sixth MO&O).*

[51] 47 C.F.R. § 90.261(a)

[52] *Refarming Sixth MO&O,* 16 FCC Rcd at 11489 ¶ 5-6

[53] *Id.*

[11] *NPRM,* 16 FCC Rcd ar 14951 ¶ 8

The Lo Power Pool (450470 MHz)

LOW POWER CHANNELS	FREQUENCY COORDINATION	NOTES/ LIMITATIONS
roup A 9 – 12.5 kHz hannel pairs nd I unpaired requency	Yes	Voice or non-voice channels 39 of 49 channels and unpaired frequency (A1) • Within 50-miles of top 100 urban areas • 20 watts ERP for baselfixed stations • 6 watts ERP for mobiles • 2 watts ERP for portables • Outside 50-miles of top 100 urban areas channels available for full power operations, *i.e.*, maximum of 500 watts ERP 10 of 49 channels **(A2)** • Available nationwide • 20 watts ERP for base/fixed station • 6 watts ERP for mobiles • 2 watts ERP for portables
roup B) – 12.5 kHz iannel pairs	Yes	Non-voice "data" channels • Available nationwide (not just top 100 urban areas) • 6 watts ERP baselfixed or mobile • 2 watts ERP portable • voice operations allowed only on a secondary non-interference basis
roup C ' – 12.5 kHz iannel pairs id 4 unpaired rquencies	No	Itinerant use channels (voice or non-voice) • Available nationwide (notjust top 100 urban areas) • 6 watts ERP mobile • 2 watts ERP portable
roup D – 12.5 kHz anncl pairr	'es	Central station alarm channels as under current ruler 3 of 5 channels • Within urban areas detined under current rule available only for central station alarm (CSA) • 2 watts TPO baselfixed or mobile • Outside urban areas defined under current rule available for all Industrial/Business Pool eligibles • 2 watts TPO haselfixed or mobile 2 of 5 channels • Nationwide available only for CSA • 2 watts TPO baselfixed or mobile

Public Safety Croup 14 – 12.5 kHz channel pairs	Yes	Public **Safety Use** • Available nationwide (notjust top 100 urban areas) • 6 watts ERP haselfixed or mobile • 2 watts ERP portable

20. Each group of frequencies is intended for a different market. For example, the Croup **A** frequencies will be utilized by low power users who need a certain degree of protection, such as campuses and manufacturing plants.[55] Croup B is directed towards utilizers of wireless non-voice communications for remote control of devices, such as robots and cranes." Group *C* is targeted for small businesses, such as plumbers and electricians, who need on-site communications on an itinerant basis." Finally, the Croup **D** channels remain for central station alarm operations. In the following sections, we describe in detail the rules that will apply to each group.

1. Group A

21. In the ***NPRM,*** the Commission sought comment on whether to create a set of fifty low power channels for coordinated use. labeled as "Group A."[58] Ten of the fifty channels would be available nationwide for low power operation, while forty of the fifty channels would be available for low power operation in locations within 80 km (50 mi.) of the top 100 urban areas.[59] Outside of these 100 areas, the fort) channels would be available for full power operation.[60] In considering this proposal, the Commissioii noted that an amendment to Section 90.267 allowing full power operations on forty channels outside the top 100 urban areas would remove the forty channels from the low power Industrial/Business Pool.[61]

22. ***Dockside channels.*** The Commission noted in the ***NPRM*** that one of the proposed frequencies for Group **A,** 457.5375 MHz, is reserved for cargo operations near docks.[62] Because maximum power for 457.5375 MHz is limited to 2 watts TPO,[63] and operation thereon must be licensed

[55] LMCC Comments at 6.

[56] *Id.* at 7.

[57] *Id.*

[58] *NPRM,* 16 FCC Rcd at 14953 ¶ 13. In addition to the fifty channel pairs specified, the same criteria apply to the channels 6.25 kHz immediately above and below lhese channels.

[59] *Id.*

[60] *Id.* In the PLMR 450-470 **MHr** hand. full power operation generally means a maximum of500 watts ERP with a reference antenna height abovr average terrain **(HAAT)** of up to 125 meters. *See* 47 C.F.R. § 90.205(g).

[61] *NPRM.* 16FCC Kcd at 14953 ¶ 13

[62] *NPRM.* 16 FCC Rcd at 14954 ¶ 13. *See* 47 C.F.R. § 90.35(c)(60).

[63] 47 C.F.R. § 90.35(c)(11)

as mobile. commenters were asked to address whether 457.5375 MHr should be exchanged for an alternate frequency.[64] Agreeing with the LMCC's proposal that the limits on this frequency prevent its use as a Group **A** channel, commenters stated that it should be dropped therefrom.[65] Furthermore, conimenters expressed no interest in its substitution with another frequency, noting that any such substitute frequency would necessarily originate from outside the low power pool, thereby leading to additional cases of high power systems on low power frequencies.[66] Therefore, frequency 457.5375 MHr will be removed from the Group A frequencies.[67] Consequently, frequency 452.5375 MHz will be an unpaired frequency in Group A.[68]

23. *Power/Antenna Height Limits.* The *NPRM* sought comment on power and antenna height limits for Group A.[69] **As** discussed above, the Commission specifically requested comment on raising the power limits for fixed/base stations from 2 watts TPO to 20 watts ERP, and limiting the antenna height to 23 meters (m) *(75* feet **(ft))** above ground level.[70] The Commission further sought comment on LMCC's proposal to convert the current limit of 2 watts TPO to 5 watts ERP for mobileiportable operation.[71] We note that LMCC later modified this proposal to a ***6*** watt ERP level for mobile units.[72]

24. Although some commenters were concerned that raising power limits for base/fixed operations would result in interference and limit frequency re-use on these channels,[73] as the Commission stated in the *NPRM*, we believe that it is important to balance the benefits of re-use with the benefits of accommodating the diverse low power radio needs prevalent among PLMR users.[74] In this regard, we believe that the higher power level of 20 watts ERP for baselfixed operations will help to provide more effective and reliable coverage. Additionally, we note the need for higher power levels for industrial and manufacturing complexes operating in hostile radio environments.[75] Further, the Group **A** channels will

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[64] *NPRM,* 16 FCC Rcd at I4954 ¶ I3

[65] *See* PCIA Comments at 3

[66] *Id.*

[67] We will also remove the frequencies 6.25 kHz above and below frequency 457.5375 MHz from Group **A** These frequencies are also designated for dockside operation.

[68] The frequencies 6.25 kHz above and below frequency 452.5375 MFlz will also be unpaired.

[69] *NPRM,* 16 FCC Kcd at 14954 ¶ 13.

[70] ***Id.***

[71] *Id*., 16 FCC Rcd at 14951 ¶ 10

[72] LMCC Comments at 6.

[73] Hexagram Parrial Opposition at 2. Hexagram calls this proposal "unwise," **as** it will reduce the number of operators that can **bc** licensed in a given geographical area. ***Id.***

[74] *NPRM,* 16 FCC Rcd at 14954 ¶ 14

[75] By "hostile radio environments," we are referring to the operational challenges experienced in industrial and manufacturing complexes due to the heavy electrical machinery and orher significant generators of unintentionally radiated electromagnetic energy that arc operated within typically enclosed environments. See, e.g., *NPRM*, 16 FCC Kcd ai 1491 n.30.

remain frequency coordinated, which will help to prevent harmful interference to low power operations. Therefore, we will set power levels on the Group A frequencies at 6 watts ERP for mobile operation, and 20 watts ERP for base or fixed station operation. Stations that serve the function of fixed but are licensed as mobile, will be limited to the mobile power limit of 6 watts ERP. We will set the power limit for Group A portable units, however, at 2 watts ERP in order to limit exposure to radiofrequency radiation from portable units.

25. *Full Power Operation.* We now turn to the issue of whether we should allow full power operations (up to 500 watts) on a portion of the Group A channels outside the designated top urban areas.[76] Although some commenters are concerned that full power operation on the Group A channels will impede reuse and spectrum efficiency,[77] we reiterate our belief in the importance of balancing the benefits of low power operations with the need for higher power operations in less urbanized areas where licensees may need to cover larger service areas. This approach will increase flexibility in rural areas, which will greatly benefit from the ability to use higher power levels. We also emphasize that pursuant to Section 90.267 of our rules, frequency coordinators currently have the authority to designate geographic areas where channels are designated for low power operations.[78] Thus, this action does not constitute a significant departure from current policy. Moreover, we note that the frequency coordinators are in the best position to discern the need for differing power levels in particular geographic areas. Finally, as discussed below, we will implement certain safeguards to prevent full power operation from impeding on low power operations.[79]

26. As an alternative to allowing full power operation, the Commission requested comment on whether a portion of the Group A channels should be available for an intermediate power level (such as 21-100 watts) rather than full power (up to 500 watts) outside top urban areas." No commenter supports designating an intermediate power level for the referenced channels. Indeed, the Industrial Telecommunications Association indicates that an intermediate power level would lead to inefficiency in the frequency coordination process.[81] Therefore, we will allow full power operation (up to 500 watts) on a portion of the Group A channels outside top urban areas. These channels will be removed from the Industrial/Business low power pool outside top urban areas. Furthermore, the Group A channels authorized for full power operations outside top urban areas will be referred to as "Group A1" while the Group A channels available for low power operation nationwide will be referred to as "Group A2".

27. In the context of high power operations on Group A channels, commenters were also asked to discuss whether we should require that equipment operating thereon be equipped with automatic power control (APC).[82] APC is a communications system capability that automatically adjusts the output power

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[76] Designation of the rop urban areas is discussed at paras. 31-32, *infra.*

[77] Comments of Hexagram, Inc. (Hexagram) at 3-4 (Hexagram Comments): Comments of the American Petroleum Institute (API) at 6 (API Comments). indicating that nearly 40% of oil refineries are located outside of urban areas.

[78] 47 C F.K. § 90.267(a).

[79] See paras. 28-30 *infra.*

[80] *NPRM,* 16 FCC Rcd at 14955 ¶ 15.

[81] Comments of the Industrial Telecommunications Association. Inc. (ITA) at 4 (ITA Comments)

[82] *NPRM,* 16 FCC Rcd at 14955 ¶ 15

of mobile and portable transmitters in order to maintain the minimum transmitting power necessary for effective communications." By utilizing the minimum power necessary, APC also minimizes potential interference. Commenters were opposed to the implementation of any requirement to use APC, out of concern regarding the costs associated with purchasing APC compliant equipment, especially for those licensees already operating equipment on this spectrum without such technology.[84] We agree with this concern. and, therefore, decline *to* require that high power licensees employ equipment with APC. Nonetheless, we take this opportunity to encourage licensees who operate high power systems on Group A channels to use APC equipment to limit the possibility of harmful interference to low power users.

28. ***Protection of Low Power*** *Operations.* In the *NPRM,* commenters were asked to discuss how high power operations outside of a 50-mile circle should protect low power users on the same or adjacent channel located within the 50-mile circle.[85] Commenters also were asked to recommend an appropriate standard, *e g.* mileage separation, contour analysis, *etc.*[86] Several commenters indicate that the frequency coordination process can address the majority of interference issues between high power and low power systems.[87] These commenters indicate that additional standards may hinder coordinator flexibility and interfere with overall coordinator effectiveness.[88] We continue to believe, however, that some guidelines are necessary to resolve cases where disputes arise between high and low power licensees. Such guidelines will provide the frequency coordinators with clear standards, which will assist with dispute resolution. Furthermore. guidelines will provide low power users with a measure of certainty regarding their operations, and provide needed, additional protection, especially since such licensees may be at a disadvantage to high power licensees during such disputes.

29. API recommends the use of contour analysis to protect low power operations from co-channel and adjacent-channel high power operation~. In this regard, API suggests performing the contour analysis from high power stations to low power stations within the 50-mile circles.[90] While we concur with API that contour analysis will provide an effective means to protect low power operations within the SO-mile circles of the top 100 urban areas, we nonetheless conclude that contour analyses from high power stations should be performed with respect to the 50-mile circles rather than individual stations within the circle. This is because we believe that the 50-mile circles around the top 100 urban areas

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[xi] *See* Development of Operational, Technical and Spectrum Requirements for Meeting Federal, Slate and Local Public Safety Agency Communication Requiremenrs Through the Year 2010. ***Second Memorandum*** **Opinion *and*** Order, WT Docket No. **96-86,** 15 FCC Rcd **16844 f** 13 **(2000).**

[84] **See API** Commenrs at 8

[85] *NPRM,* **16** FCC Rcd at 14956 ¶ 17.

[86] ***Id***

[87] LMCC Comments at **7;** PCIA Commenrs at 3: **ITA** Comments at 4

[88] *Id.*

[89] **API** Comments *at* 9

[90] *Id* API suggests rhat for co-channel operations. the 21 dBu contour of a high power applicant should not overlap thc 39 dBu contour of a low power incumbent. In addition, API suggests that for adjacent-channel operations. the 33 dBu contour of a high power applicant should not overlap the 39 dBu contour of a low power incumbent. We note that rhe contours suggested by API are used to determine objectionable interference between UHF stations pursuant to our trunking rules. **See47** C.F.R. § 90.187(b)(2)(iii).

should be "safe havens" for low power operations. Without such "safe havens," we believe that high power stations operating just outside the 50-mile circler could significantly reduce the number of frequencies available for low power use within the 50-mile circles. For example, we believe that the 21 dBu interfering contour of any high power station – operating on a Group A1 channel – should not overlap the 50-mile circle of any top 100 urban area. This contour analysis method will not only protect incumbent low power stations from harmful interference, but also allow for future growth of low power stations within the 50-mile circle.

30. The contour analysis method described above will apply to any station operating on Group A1 channels which exceed the low power limits of Group A (20 watts ERP fixedibase, 6 watts ERP mobile and 2 watts ERP portable). Stations operating outside the 50-mile circles which satisfy the Croup A power limit requirements will not have to comply with this provision and may allow their 21 dBu interfering contour to overlap the 50-mile circle. Currently authorized high power stations which do not comply with this provision will be discussed in more detail below."

31. *Defining Top Urban Areas.* Regarding Group A. the Commission sought comment on the most appropriate method for defining top "urban areas."[92] The Commission noted that, in the past, it had defined urban areas based on population statistics derived from U.S. Department of Commerce, Census Bureau data,"' other statistical areas defined by the U.S. Census Bureau? and other U.S. Department of Commerce references to establish the center coordinates for these areas." The Commission further noted that variations on the "top urban areas" concept are proposed in other pending Commission proceedings. and asked commenters whether the cutoff for the top areas should be 100 or some other number."

32. Most commentcrs supported using the list of urban areas provided in the table in Section 90.731 of our rules,[97] stating that it provides a clear definition for top urban areas.[98] The referenced table

[91] *See* paras. 79-80, *infra,* for a discussion on grandfathered operations

[92] *NPRM,* 16 FCC Rcd at 14955 ¶ 16.

[93] See, *e.g.*, 47 C.F.R. §§ 90.261 (TPO limitations based on proximity to center ofany urbanized area of 600,000 population):47 C.F.R. § 90.35(c)(i)(63) (central station alarm use restricted to areas within boundaries of urbanized areas of 200,000 or more population): 47 C.F.R.§ 90.635 (power and antenna height limitations based on proximity to 50 urbanized areas); 47 C.F.R.§ 90.741 (licensees of Phase I nationwide 220-222 MHz systems must construct and operate in 28 of 100 listed urbanized areas). *See also* Amendment of Part 90 of the Commission's Rules Concerning Bio-Medical Telemetry Operations, PR Docket No. 80-422, *Reporr andorder,* 85 FCC 2d 745 ¶ 9 (1981).

[94] ***See,*** *e.g.*, 47 C.F.R. § 52.23 (schedule for deployment of long-term database methods for number portability by local exchange carriers is defined, in part. by reference to 100 largest Metropolitan Statistical Areas (MSAs)).

[95] *See* U.S. Department of Commerce. *Airline Distance Between Cities in the United States*, Appendix, page 226; 47 C.F K. § 90.261

[96] *NPRM,* 16 FCC Rcd at 14955 ¶ 16; *See, e.g.*, The Development of Operational, Technical and Spectrum Requirements for Meering federal, State and Local Public Safety Communication Requirements Through rhe Year 2010. WT Docket No. *96-86. Fourth Reporr and Order and Fifth Notice of Proposed Rule Making.* 16 FCC Rcd 2020. 1054 ¶ 97 (rel. Jan. 17, 2001) (noting "live-step, lwenty-one year plan" proposal that would require Public Safely 700 MHr band General Use operalions in Top fifty metropolitan areas to migrate to 6.25 kHz technology five-years earlier than proposed deadline tor outside areas).

[97] 47 C.F.R. § 90.731

provides a list of tlie top 100 urban areas and specifies the center coordinates.[99] Hexagram suggests that we use a Metropolitan Statistical Area (MSA) Definition.[100] Hexagram asserts that this system is tavorablc because of industry familiarity therewith, and adds that it will provide protection for suburban and outlying areas that are not anchored to center coordinates of the metropolitan base, but which may also experience the same frequency use encountered at the geographic center coordinates.[101] We believe, however, that **using** the table in Section 90.741 is preferable for the instant service. This table has been used for the 220-222 *MHr* band. with notable success. Further, because the list clearly specifies the affected cities, we believe it will provide licensees on this band with a simple and lucid reference of applicability Moreover, the fact that the table lists 100 cities supports commenter endorsement for a cutoff of no less than 100 urban areas.[102] Consequently, for Group **A** channels, we will define top urban areas using the list provided in the table in Section 90.741 of our rules.

33. *50-Mile Circles.* In a related matter, the *NPRM* sought comment **on** the LMCC's proposal to set the limit for low power operations on the 40 channels in Group **A** l to within 50 miles of the top 100 urban areas. One commenter suggests that the circles for low power operation around the top 100 urban areas should be extended beyond the 80 kilometer (50 mile) distance reflected in the *NPRM,* to at least 120 kilometers *(75* miles).[103] However, commenters generally support the SO-mile proposal set forth in tlie *NPRM.*[104] Inasmuch as there was no overwhelming support to change this value, we will implement the proposed 50-mile circles. We note that licensees may still operate on low power, but such operations will not be mandatory outside the urban areas.

34. Commenters were also asked to discuss low power operations at the edge of the 50-mile circles.[105] Specifically, commenters were asked to discuss how low power operation extending outside the "fifty-mile circles" should be considered in a coordination analysis. The Commission gave the example of a low power base station located forty seven miles from the center of an urban area with an operating radius of five miles, and asked whether coordinators should take into account the area outside the 50-mile circle when performing coordination analyses for high power stations outside the circle.[106]

35. In response to the Commission's request, the LMCC acknowledged the Commission's concern that high power systems outside the 50-mile circle may conflict with low power systems within the circle.[107] To resolve this concern, the LMCC recommends that whether a system is considered within

(Continued from previous page)

[98] ***See*** LMCC Comments at 6; API Comments at *7;* PCIA Comments at 3.

[99] 47 C.F.R. § 90.741

[100] Hexagram Comments at 7.

[101] *Id.*

[102] See **API** Comments at *7;* AWWA Comments at 3

[103] **API** Comments at 7 (indicating that most oil and gas operations fall outside the SO-mile circle)

[104] ITA Comments at **4;** PCIA Comments at 3; Comments of the United Telecom Council (UTC) at 3 (UTC Comments).

[105] *NPRM.* 16 FCC Rcd at 14956 ¶ 17.

[106] *Id.*

[107] LMCC Comments at 7.

or outside the circle he determined by the location of the fixed station for high power stations, and the center of the operating area for low power mobile systems.[108] Specifically, for Group **A** l channels. the LMCC believes that fixed stations located within the 50-mile circle should he limited to the low power limit of 20 watts ERP, while fixed stations located outside the SO-mile circle should be eligible for full power (500 watt) operation. Furthemore, it believes that mobile units with areas of operation centered within the 50-mile circle should be limited to the **low** power limit of 6 watts ERP, while mobile units with an area of operation centered outside the 50-mile circle should be eligible for full power operation. We concur and hereby adopt the LMCC's proposal.

36. In order to prevent high power mobile units from encroaching on the SO-mile circles, no wide area operations will be authorized for mobile units which exceed the low power limit of *6* watts **ERP** on Group **A** l channels. Rather, mobile units will be required to specify their area of normal, day-to-day operations in terms of a maximum distance from a geographical center. Under this approach, the applicant would identify a geographical center and, as a general matter, a distance not to exceed a SO-mile radius from such geographical center. **As** stated above, however, any mobile unit which exceeds the low power limit of 6 watts ERP on Group **AI** channcls may not have an area of operation centered within the 50-mile circle ofany top 100 urban area.

37. *Non-voice Operations* The Commission noted in the *NPRM* that its rules currently permit all the channel pairs listed in Group **A** lo be used for telemetry operations on a secondary basis, and that such operations are limited to 2 watts TPO.[109] In light of the proposed changes to Group **A,** the Commission sought comment on whether Group **A** should continue to be designated primarily for voice operations (with non-voice operations authorized on a secondary basis), or if non-voice operations should be limited to Croup B as described below.[110]

38. Notwithstanding the varied opinions on how or whether to permit non-voice operations on these channels. comnienters expressed overwhelming support for the designation of spectrum for data operations, citing the continuously growing use of data applications.'"[111] We agree with commenters that the growing need for data operations justifies permitting such applications on the Group **A** channels. **As AES** Corporation points out. because wireless data messaging **is** growing much faster than voice, providing spectrum for data optimizes spectrum utilization.[112] Furthermore, many entities, including petroleum and natural gas companies. use data as part of their communications systems.[113] Moreover, as Dataradio points out. non-voice applications are already prevalent on the Group **A** channels.[114] Therefore, we will continue to allow non-voice applications on the Group **A** channels.

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[108] *Id.*

[109] *NPRM,* 16 FCC Rcd at 14956 ¶ 18: *see* 47 C.F.K. § 90.35(c)(30).

[110] *NPRM,* 16FCCRcdat 14956 ¶ 18

[111] UTC Commenls at 6: Comments of Trimble Navigation Limited (Trimble) at 3 (Trimble Comments); **API** Reply Comments at 2-3; Dataradio Reply Comnienrs at 1-5.

[112] Commcnts of AES Corporation (AES) at 3 (**AES** Comment\)

[113] API Comments at 10

[114] Dataradio Comments at 4

39. The LMCC proposes that we permit baselmobile and fixed data systems to operate on Group A channels."' We agree. The LMCC also suggests, however, that mobile-only data systems he prohibited.[116] The LMCC reasons that because mobile-only systems are licensed for an area rather than a permanent localion, such operations are more difficult to pinpoint when interference occurs."' We believe, however, that the LMCC's concern regarding "pinpointing" mobile-only data systems is overstated. Low power systems licensed pursuant to Section 90.267 of our rules will be prohibited from specifying operations over a wide area. Rather. we will require applicants for low power systems to specify their area of normal. day-to-day operations in terms of a maximum distance of 50 miles from a geographical center. Inasmuch as mobile-only data systems will operate within a confined area, such systems will he more easily identified should harmful interference occur. Additionally, we note that if we prohibited mobile-only data, operators of data systems would need to supply coordinates for every fixed site in a system. As we indicated previously, however, providing coordinates for every fixed site would be an administrative burden for entities that operate numerous fixed sites throughout their service area."' Therefore, we believe that entities that operate data systems should be able to license multiple fixed sites as mobile. Consequently, we will permit mobile-only data systems to operate on Group A channels. We note, however, that mobile-only data systems must monitor the transmit frequency for communications in progress before transmitting in order to avoid causing harmful interference.[119]

40. Turning to the issue of whether data operations should be co-primary or secondary to voice on low power channels, the LMCC and Motorola believe that coordinated baselmobile data operations should he co-primary to voice operations, and that coordinated fixed data operations should be secondary to voice operations.'" We agree that the growing demand for non-voice spectrum justifies the designation of data operations as co-primary to voice. We disagree, however, that there should he a distinction in status between baseimobile data and fixed data operations. If fixed data systems are relegated to secondary status, we believe that most applicants who employ fixed data will he inclined to license their systems as mobile in order to receive co-primary status. This is at odds with our actions encouraging applicants, whenever feasible, to provide specific coordinates for fixed sites in order to enhance the frequency coordination process."' By authorizing fixed data on a co-primary basis to voice operations. we believe that applicants will provide more accurate information regarding the location of fixed data sites. Therefore. on Group A channels, we will allow all classes of data (fixed, base/mobile or mobile-only) to operate on a co-primary basis to voice operations. In the interest of frequency reuse, however, we will prohibit continuous carrier systems on Group A channels.

4 I, We have indicated that data operations will be co-primary with voice operations on Group A frequencies. We note, however, that many of the Group A frequencies are currently subject to Section

[115] LMCC Comments at 8

[118] *See* discussion at para. 17, *supra*.

[119] *See* 47 C F.R § 90 403(e).

[120] Motorola comments ai 3; LMCC Comments at 7-8. The LMCC points our that fixed data operations are currently secondary to voice operations on most Part *90* frequencies. *Id*

[121] *See* discucsion at para. 17, *supra*

90.35(c)(30) of our rules, which authorizes telemetry operations (a subset of data) on a secondary basis to voice operations."[122] Inasmuch as Group **A** frequencies are intended for either voice or data operations on a co-primary basis. we will remove this limitation from Group **A** frequencies.

2. Group B

42. In the *NRPM*, the Commission tentatively concluded that it should adopt the LMCC's proposal Tor Group B. which would consist of ten 12.5 kHz offset channel pairs for low power non-voice. coordinated use."[123] This tentative conclusion was based on the Commission's recognition *of* a need for noli-voice operations. particularly for critical safety operations. which could "suffer significant safety hazards if shared with voice operations".[124] Commenters were generally in favor of the Group B proposal, and it will thus be adopted to the extent indicated below.

43. *Power/Antenna Height Limits* The *NPRM* proposed a maximum TPO for mobileiportable, base and fixed operation of 2 watts, and a maximum antenna height above ground for base and fixed stations *of* 7 meters (20 ft) on the Group B frequencies."[125] As discussed above, however, the LMCC proposed to convert the current limit of 2 watts TPO to 6 watts **ERP,** believing that a conversion from TPO to ERP would enhance the effectiveness of the frequency coordination process and increase the availability of spectrum.[126] Dataradio, however. proposes to increase the limits for Group B base/fixed stations lo the Group **A** limits of 20 watts ERP and 23 meters *(75* feet) for antenna height.[127]

44. We disagree that equivalent limits should be established for Group **A** and Group B channels. In the ***NPKM,*** the Commission proposed four unique channel groups based on its determination that there are unique and varying needs amongst PLMR users, such as for non-coordinated itinerant use, coordinated voice use, and coordinated non-voice use. These varying needs include various power levels; hence the proposed power levels distinctions between Groups **A** & B. Adopting Dataradio's proposal to raise power levels in Group B would be at odds with our recognition of the varying needs of the PLMR community. Furthermore, we note that Dataradio and other users seeking to employ data applications at thc higher power levels can do so on the Group **A** channels.[128] Consequently, we deny Dataradio's request and implement the LMCC's suggested limits of 6 watts ERP and 7 meters (20 A) antenna height for Group B channels. We will set the power limit for Group B portable units, however, at 2 watts ERP in order to limit exposure lo radiofrequency radiation from portable units.

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[122] *See* 47 C.F.R. § 90.35(c)(30)

[123] In addition to the ten 12.5 kHz channel pairs specified, the same criteria apply to the channels 6.35 kHz immediately above and below these channels.

[124] *NPRM,* 16 FCC Rcd at 14956 ¶ 19: *see* Petition at 7. LMCC notes that typical operations on these channels would include wireless data transmissions used for "remote control of cranes, roborics, etc." ***Id.***

[125] *NPRM,* I6 FCC Rcd at 14957 ¶ 19

[126] LMCC Comments at 10

[127] Dataradio Comments at 6. Toro also support3 an increase in antenna height for Group B baselfixed stations. Toro Comrncnts at 4: Toro Reply Comments at 4.

[128] *See* para. 38, *supra*

45. *Voice operations.* In the *NPRM,* the Commission sought comment on whether the ten data channels in Group B should be designated **as** "data primary" instead of "data only."[129] The LMCC recommended that the commission permit voice operations on the Group B data channels on a secondary, non-interfering coordinated basis, in order to maximize spectrum efficiency."[130] We note, however, that in the *Refarming* proceeding, a petitioner averred that shared use of voice and non-voice channels could have catastrophic results[131] and that interference avoidance would be costly and inefficient for users employing non-voice transmissions."[132] Accordingly. the Commission sought comment on whether the "data only" approach was necessary to adequately protect data operations, especially in light of the fact that critical safety operations are contemplated in this band.[133]

46. Some commenters expressed concern that voice operations would cause interference to mission critical data operations."[134] In contrast. other commenters averred that these frequencies should not he limited to data operations."[135] For example, several commenters assert that any voice operations on Group B channels should be limited to directly supporting a licensee's data operation.[136] We believe, however, that crafting a restriction that limits the manner in which a licensee uses a particular channel would be difficult if not impossible to enforce. Although we recognize the concern regarding potential interference to mission critical data operations, we agree with commenters, such as Toro, that maximum spectrum efficiency will be achieved by permitting voice operations on a secondary, non-interference basis.[137] In this regard, **we** note the LMCC's concern that a prohibition of secondary voice operations on the Group **B** channels may require some users to purchase additional equipment in order to support their non-voice operations.[138] **Wc** rciterate that the Group **B** channels will remain frequency coordinated, which will help prevent harmful interference to primary data operations."[139] Furthermore, we note that frequency coordinators are free to limit the recommendation of voice operations on Group B. Specifically. the frequency courdinators may choose to recommend voice operations on Group B channels

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[129] *NPRM,* 16 FCC Rcdat 14956-7 ¶ 20

[130] Petition at 7

[131] The example that thr petitioner provided **was** a voice transmission causing a remote oil tank to **be** overfilled and mpturing. *See* Dataradio Petition lor Reconsideration and/or Clarification of the *Second MO&O*, filed August **5.** 1999 at 11-12.

[132] *Id.* at 12. *The* Commission concluded that *this issue went* beyond the **scope *of*** the *Refarming* proceeding and that Dataradio's concerns would he most appropriately raised and considered in the context of LMCC's Petition. *See Refarming Fifth MO&O.* 16 FCC Kcd at 420-1 ¶¶ 11-12.

[133] ***NPRM*** 16 FCC Rcd at 14956-7 ¶ 20

[134] AES Comments at 4-5; Dataradio Comments at 9-10.

[135] **API** Comments at 11. Toro Comments at 6-7.

[136] LMCC Comment, at 10; PCIA Comments at 5: Dataradio Reply Comments at 4.

[137] Toro Comments at 6-7.

[138] LMCC Reply Comments ai 3

[139] *See id*., indicating that proper frequency coordination can minimize the rish of interference between data and voicc.

only to entities that are performing data operations. Consequently, we designate Group B channels as "data primary" and allow secondary voice operations.

47. *Telemetry Limitation.* In the *NPRM,* the Commission noted that all Group B frequencies are currently governed by Section 90.35(c)(30) of our rules, a provision that designates telemetry operations as secondary.[1-10] inasmuch as the Group B frequencies are intended for data or telemetry operations, the Commission tentatively concluded that this limitation should be removed for these frequencies.[141] Commenters were generally supportive of this tentative conclusion.[142] Therefore, we will remove the limitation specifying telemetry as secondary from Group B frequencies.

48. *Continuous Carrier/Protected Service Areas.* In the *NPRM,* the Commission sought comment on whether it should allow continuous data transmissions on Group B channels.[143] Some commenters support allowing continuous carrier transmissions on Group B channels provided we apply "protected service areas" around these operations.[144] Commenters **use** the term "protected service area" to refer to **an** area where a licensee has exclusive use of a frequency.[145] Continuous carrier operations require exclusive use of their frequency because these systems have no monitoring capabilities and are constantly transmitting. Without exclusive use of a frequency, continuous carrier operations can cause significant harmful interference to other users.

49. UTC and Motorola suggest that we modify our Part 90 trunking rules to accommodate continuous carrier data operations.[146] Pursuant to Section 90.187 of our rules, trunked systems operating below 512 **Mliz** may obtain exclusive use of a frequency if the trunked system obtains written consent from all affected licensees.'" **A** trunked system that has obtained exclusive use of a frequency is protected from encroaching co-channel and adjacent-channel systems and, therefore, operates within a "protected service area."[148] UTC and Motorola request that **we** apply the criteria of Section **90.187** to continuous carrier data operations in order to allow them to obtain "protected service areas."[149]

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[140] *NPRM,* 16 FCC Rcd at 14956 ¶ 19. *See* 47 C.F.R. § 90.35(c)(30).

[141] *NPRM.* 16 FCC Rcd at 149561 19

[142] *See* LMCC Comments at 10; Toro Comments at 6

[143] *NPRM.* 16 FCC Rcd at 14956 ¶ 19

[131] UTC Comments at 7-9; Motorola Comments at 3-5

[145] UTC Comnients at 7-9: Motorola Comment, at 3-5. Exclusive use of a frequency means that a licensee may operate without monitoring for other users.

[146] *Id*

[147] 47 C.F.R. § 90.187. This provision was designed to allow trunking systems to work effectively and efficiently on the private land mobile frequencies below 5 12 MHz. ***See*** Replacement of Pan 90 by Part 88 to Revise the Private Land Mobile Radio Service and Modify the Policies Governing Them. *Second* ***Reporr*** *and* ***Order,*** PR Docker No 92-235, 12 FCC Rcd at 14337-38 (1997).

[148] 47 C F.R. § 90.187(b)(2)(v)

[119] UTC Comnients at **7-9:** Motorola Conimcnts at 3-5

50. The LMCC recognizes that continuous carrier operations require "protected service areas" and that the Commission's rules do not presently accommodate such operations."[150] The LMCC and Triinble suggest that we defer a decision on the matter of "protected service areas" for continuous carrier data systems until this issue can bc studied more completely.[151] We generally agree that it would he inappropriate to establish "protected service areas" in the instant proceeding. The proposals by UTC and Motorola are beyond the scope of this proceeding and implicate all private land mobile frequencies below 5 12 MHz. Accordingly. we deny the request to establish "protected service areas" for continuous carrier data systems on Group B channels. In this connection, we note that such continuous carrier data systems are not permitred under current rules.

51. *Duty Cycle.* In the *NPRM*, the Commission requested comment on whether to specify a duty cycle for Group B operations.[152] The specification of a duty cycle limits the number and length of transmissions which may occur in any specific time period. Commenters in favor of duty cycle limitations assert that this approach would promote frequency re-use and spectrum efficiency by preventing high traffic licensees from monopolizing shared channels."[153] On the other hand, Toro opposes a duty cycle because the random nature of its communications will not fall easily into the pattern of a duty cycle.[154] No commenter provides us with specifics regarding designing a duty cycle that will promote frequency re-use without limiting the flexibility of operations such as Toro's. Furthermore, we agree with API that re-use concerns are mitigated by coordination and low power use."[155] Because the record before us does not clearly dictate the need for a duty cycle to promote frequency reuse, we will refrain from imposition thereof for Group B channels. We note, however, that licensees must continue to share these frequencies.[156]

52. ***AES Proposal.*** **AES** states that certain specialized non-voice operations should be allowed to operate on Group **B** channels without frequency coordination.'"[157] **AES** indicates that such transmitters would have a TPO greater than .01 watts hut never more then 2 watts."[158] AES further states that these very low power devices would perform the function of controlling equipment, reading measurements and providing alerts."[159]

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[150] LMCC Comments at 9

[151] LMCC Reply Commenrs at 2: Trimble Reply Commenrs at 6.

[152] *NPRM*, 16 FCC Rcd at 149567 19

[153] **AES** Comments at *6;* Hexagram Comments at 8.

[154] Toro Commenrs at 7

[155] API Comments at 10.

[156] Frequencies are available on a shared basis and will nor be assigned for the exclusive use ofany licensee. 47 **C.F.R.** § 90.173(a).

[157] AES Commciirs at **5**

[158] *Id.*

[159] *Id.*

53. AES has not provided sufficient reason to exempt its operations from frequency coordination on Group R channels. Frequency coordination thereon will promote frequency reuse and minimize the potential for harmful interference. Furthermore, the operations described by AES appear to be virtually identical to those envisioned for Group C. AES may perform operations without frequency coordination on Group C channels as discussed below. or in other bands covered by Pan *95* of our rules, such as the Multi-usc Radio Service (MURS).[160]

54. *Mobile-Only.* In its comments. the LMCC proposes that mobile-only data operations be prohibited on Group B channels, averring that such systems operate without monitoring for other users thereby causing harmful interference to other systems.[161] As discussed above, the LMCC made the same request for Group A, asserting that when harmful interference occurs, mobile-only data systems are difficult to pinpoint because they are licensed for an area of operation instead of a specific set of coordinates.[162] As we indicated for Group A, however, we believe that "pinpointing" mobile-only data will not be difficult because licensees on these frequencies will be prohibited from specifying wide area operations.[163] Additionally, we noted that if we prohibited mobile-only data, operators of data systems would need to supply coordinates for every fixed site in a system, thereby yielding administrative burdens for such licensees.[164] Therefore, as with Group A, we will permit mobile-only data systems to operate on Group B channels. We note, however, that mobile-only data systems must monitor the transmit frequency for communications in progress before transmitting in order to avoid causing harmful interference.[165]

3. Group C

55. In the *NPRM,* the Commission sought comment on the LMCC's proposal for Group C, which would consist of twenty-five 12.5 kHz offset channel pairs for low power non-coordinated. itinerant use.[166] The commission's rules define itinerant operation as operation of a radio station at unspecified locations for varying periods of time.[167] These frequencies would be used by small businesses, such as clectricians, plumbers, and others who need short-term, oil-site communications.[168] Users would be required to obtain a license for such use, however. licensees would not be required to specify a location from which they would operate. and would be permitted to operate anywhere nationwide without prior

[160] *See* 47 C.F.R. § 95.1301 et seq

[161] LMCC Comments at 8-9. The LMCC describes the interference problems created by mobile only data systems in the content of Group A channels. PCIA concurs rhat mobile-only data should be prohibited. PCIA Comments at 4.

[162] LMCC Comments at 8.

[163] *See* para. 39. *supra*

[164] *Id.*

[165] *See* 47 C.F.R. § 90.403(e)

[166] *NPRM,* 16 *FCC* Rcd ai 14957 ¶ 21, *citing* Petition at 7. In addition to the twenty-five 12.5 kHz channel pairs specified, the same criteria apply Io the channels 6.25 kHz immediately above and below these channels.

[167] 47 C.F.K. § 90.7.

[168] Petition at 7.

coordination."[169] Commenters agreed with the proposal, acknowledging the need for low power, uncoordinated, itinerant operations. Further, we believe that adoption of this proposal will provide certain low power users. such as construction companies, needed flexibility in establishing short-term communications systems. Therefore. we adopt LMCC's proposal with respect to Group C, to the extent indicated below.

56. *Power/Antenna Height Limits.* The *NPRM* proposed a maximum TPO for mobile/portable, base and fixed operation of 2 watts, and a maximum antenna height above ground for base and fixed stations of 7 meters (20 ft) on the Group C frequencies."[170] As discussed above, however, the LMCC proposed to convert the current limit of 2 watts TPO to 6 watts ERP, believing that a conversion from TPO to ERP would enhance the effectiveness of the frequency coordination process and increase the availability of spectrum."[171] No other commenter specifically discussed power and antenna height limits for Group C. As we have discussed in great detail above, we agree with the LMCC that the use of an ERP standard is preferable and will thus adopt the LMCC's suggested limits of 6 watts ERP and 7 meters (20 ft) antenna height for Group C channels."[172] We will set the power limit for Group C portable units, however, at 2 watts ERP in order to limit exposure to radiofrequency radiation from portable units.

57. ***Dockside Channels.*** The Commission noted in the *NPRM* that four of the frequencies specified in the LMCC's Petition, 467.7625 MHz. 467.7875 MHz, 467.8125 MHz, and 467.8375 MHz, are currently designated under our Part *90* rules for dockside operations on a primary basis, and are also authorized for mobile operation. radio remote control, and telemetering functions.[173] Because the Commission tentatively concluded that sharing between the currently authorized uses and the proposed non-coordinated, itinerant operations was not advisable due to the potential for harmful interference, in the NPRM it sought suggestions on replacement channels for the four listed above.[174] The LMCC suggested that these channels he dropped with no replacement so as to prevent additional cases of high power systems licensed on low power frequencies."[175] However, Motorola disagrees that uncoordinated low power operations will be incompatible with dock-side operations.[176] We disagree with Motorola that itinerant operations on Group C channels can coexist with primary dockside operations. Itinerant operations on these four frequencies would need to remain secondary to dockside operations. However, because itinerant operations occur at unspecified locations without prior notice, it is unfeasible to limit their use in order to protect primary dockside operations. Consequently, we will remove these frequencies from Group C and will not designate replacement frequencies. The four originally corresponding frequencies will be left unpaired.

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[169] These frequencies would be available for use nationwide, as the types of projects suited for low power, itinerant communications can take place in any state or region.

[170] *NPRM.* 16 FCC Rcd at 14957121

[171] LMCC Comments at 10.

[172] *See* para. V, *supra*

[173] *NPRM,* 16 FCC Rcd at 14957722. *See* 47 C.F.R § 90.35(c)(35) & (60)

[174] ***NPKM.*** 16 FCCRcdat 14957 ¶ 22

[175] LMCC Comments at 11

[176] Motorola Comments at 7.

58. *Fixed Operations.* The Commission noted in the ***NPRM*** that most of the Group C channel pairs are subject to Section 90.35(c)(62) of our rules,[177] which authorizes fixed operations on a secondary basis to land mobile operations pursuant to Section 90.261.[178] We have subsequently clarified herein that Section 90.261 does not apply to low power channels and that fixed operations are co-primary to low power land mobile operations.[179] However. in the *NPRM,* the Commission sought comment on whether fixed operations should he prohibited on itinerant frequencies. We agree with AWWA that fixed operations are inconsistent with the concept of itinerant operation.[180] We believe that fixedibase operation at a permanent site should he performed on frequencies designated for non-itinerant low power operations. Consequently, we will only license mobile operations on Group C itinerant frequencies. Although all stations will be licensed as mobile. we note that operation at a "fixed" location for a temporary period *of* time will be permitted on Group C. These temporary "fixed" sites will be limited to the LMCC recommended limit of 7 meters (20 ft) antenna height.

59. *Dora Operations.* In a related matter, the Commission noted in the ***NPRM*** that most *of* the Group C channel pairs are subject to Section 90.35(c)(30), which authorizes telemetry operations on a secondary basis to voice operations.[181] As also noted in the ***NPRM,*** however, the lack of infrastructure inherent therewith renders itinerant services incompatible with the concept of employing secondary operations. Specifically, there is no way for entities proposing secondary operations to coordinate their activities around the primary operation. Consequently, the Commission sought comment on whether data transmissions should be prohibited on these frequencies.[182] **All** comments on this subject support data operations on Group C channels.[183] **We** agree with commenters that itinerant users will benefit from flexible voice or data operations on Group C channels.[184] Consequently, Section 90.35(c)(30) of our rules will not be applicable to the Group C frequencies, and we will allow data operations on a co-primary basis to voice operations.

60. *Medica/ Telemetry.* In the ***NPRM,*** the Commission noted that ten of the low power channels proposed for Group *C* are currently available to hospitals and health care institutions for medical radio

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[177] 47 C F R § 90 35(c)(62)

[178] 47 C F R § *90* 35(c)(26 I) *See NPRM,* 16 FCC Rcd ar 14958 ¶ 24

[179] *See* discussion at para 17, ***supra***

[180] *See* AWWA Comments at 4

[181] 47 C.F.R. § 90.35(c)(62). ***See*** *NPRM,* 16 FCC Rcd ar 14958 ¶ 24

[182] *Id.*

[183] Comments of Enalysis Corporation (Enalysis) at *2-3* (Enalysis Comments); Comments of Pacific Crest Corporation (Pacific Crest) at **4-5** (Pacific Crest Comments); Trimble Comments at 6-7; Hexagram Reply Comment, at 7: see *also* Letter from Mitchell Lararaus. Esq. to Secretary, FCC, dated October 25, 2002 ("Hexagram *Ex Parte*") at 4.

[184] Pacific Crest Comments at 1-4 (stating that Croup C channels have great potenrial for Real-Time Kinematic (RTK) technology which is used in **support** ofprecision Global Positioning Systems for applications such as surveying; Trimble Comments at 6-7 (stating that itinerant users require simultaneous voice and dara communicarions at a site. **as** in thc case of construction crews employing CPS systems for machine control applications).

telcmetry operations on a secondary basis.[185] Because the LMCC's proposal would allow non-coordinated, itinerant operations on Group C, the Commission expressed concern that the proposed use would cause harmful interference to telemetry operations.[186] It therefore tentatively concluded that these ten frequencies should not be made available for non-coordinated, itinerant use until the end of the medical telemetry transition period.[187] Some commenters disagreed with this tentative conclusion. For example, the LMCC maintained that no delay was necessary because the contemplated low power uses should not interfere with telemetry, and that the color dot protections discussed *infra* would provide adequate protections thereto.[188] However, these commenters did not present sufficient evidence to persuade us to change the Commission's tentative conclusion that itinerant use could present a great deal of harm to telemetry operations. Therefore, we will permit itinerant use on the ten Group C frequencies available for inedical radio telemetry operations upon completion of the medical telemetry migration deadline.[189]

61. Some commenters have taken this opportunity to request an extension **of** the October 2003 deadline for migration of medical telemetry equipment in the 460-470 **MHz** band to frequencies dedicated tn WMTS.[190] We believe it would be inappropriate to act on such requests in the instant proceeding. We first note that these requests, which have been filed in the form of comments to our proposal to establish a non-coordinated itinerant service, extend beyond the scope of the *NPRM.* Indeed, the *NPRM* did not provide notice to PLMR users that the Group C spectrum, currently utilized by medical telemetry users, might be frozen beyond the current migration deadline. Furthermore, we conclude that the record before us is insufficient to justify extending the transition period. Therefore, we deny the requests for an extension of the October 2003 medical telemetry migration deadline.

62. *Group C Radio Equipment.* The Cornmission tentatively concluded in the ***NPRM*** that manufacturers of the radios used for the Group C channels must construct the radios to work only on these twenty-five channels and other UHF color dot and star dot frequencies in order to help protect full power coordinated channels from additional co-channel conflicts that might occur from uncoordinated users.[191] Some commenters agreed with our conclusion.[192] For example, PCIA asserts that such a

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[185] *NPRM.* 16 FCC Rcd at 14958 (I 24: 47 C.F.R. §§ 90.35(c)(67), 90.267(a)(5). These frequencies include: 461.1625 MHz. 462.7875 MHr, 462.8125 MHr, 462.8375 MHz. 462.8625 MHr, 462.8875 MHz, 462.9125 MHz, 467.8625 **MHr,** 467.8875 MHz, and 467.9 125 MHz. Although such medical telemetry operations are authorized on a secondary basis. the Commission has previously recognized the imponance ofthis **vital** service. ***See.*** *e.g., Medical Telemetry R&O,* 15 FCC Rcd at 11206 ¶ 1; *see also* note **18** and accompanying text, ***supra.***

[186] *NPRM,* 16 FCC Rcd at 14958 ¶ 24

[187] *Id.*

[188] LMCC Comments at 10.

[189] These frequencies are subjecr to 47 C.F.R. § 90.35(c)(67) as revised in Appendix B.

[190] Comments of Allina Health Systems (Allina) at 1 (Allina Comments); Reply Comments ofthe American Hospital Association Task Force on Medical Telemetry (AHA) at 7-9 (AHA Reply Comments).

[191] *NPRM,* 16 FCC Rcd at 14958-90 ¶ 25. Certain low power and itinerant frequencies in the Industrial/Business Pool that are used for very low tier. low cost, entry level communications are commonly referred to **as** color dot frequencies because their operating frequencies are designated by a colored dot or star on the radio. This frequency identification code was developed **by,** and apparently is uniformly used by, ihe manufacturers of these radios. *See, e g .* 1998 Biennial Regulatory Review – 47 C.F.R. Part 90 - Private Land Mobile Radio Services, *Notice of Proposed Rule Making.* WT Docket No. 98.182, 1 FCC Rcd 2,113 ¶ 31 n.55 (1998).

restriction is critical to reducing unlicensed, uncoordinated use of non-itinerant spectrum.[192] Motorola, however. assens that such a restriction would likely harm users with varying communications requirements who would be required to purchase multiple radios instead of having the frequencies built into a single radio.[194]

63. Aftcr reviewing the record in this proceeding, we concur with Motorola that such a restriction on the equipment is not necessary here. First, we note that under LMCC's proposal, as well as the *NPRM,* licensing on Group C frequencies would remain restricted to Industrial/Business Pool eligibles. Further. as Motorola points out, somc of the Industrial/Business users most likely will have varying communication requirements beyond itinerant low power operations. As a result, we are concerned that adopting the proposed restriction on radio equipment could result in such users being required to purchase multiple radios to meet their various communications needs as opposed to a single unit. The record is devoid of evidence that failure to adopt the proposal would adversely affect the effective and efficient utilization of these frequencies. Absent such showing, we believe that it would be inequitable to require users to purchase ʙ separate radio in order to operate on Group C itinerant low power frequencies. Accordingly, we will allow equipment manufacturers to combine Group *C* frequencies with other non-itinerant frequencies into a single radio.[195]

64. ***Incumhrnr Low Power Operorions.*** In the ***N P M ,*** the Commission sought comment on how incumbents on Group C channels should be treated.[196] Hexagram urges us to protect incumbents on these frequencies.[197] Hexagram slates that non-coordinated itinerant equipment should be prohibited from operating in areas licensed to existing low power users.[198] We believe, however, that Hexagram's proposal conflicts with the itinerant nature of Group C frequencies. Because itinerant operations are. by nature, intended for use at any location without prior coordination, it is not viable to permit itinerant operation while still restricting its use in certain areas. Consequently, we will not afford incumbents special protection from itinerant operations but we will allow them to continue operating on the Group C frequencies under the terms of their existing authorizations. We believe this approach strikes the proper balancc between the benefits of allowing itinerant operations[199] and any adverse impact on incumbent users, Moreover, this approach is consistent with the Commission's interest in promoting flexible spectrum use among similar operations. In this connection, we note that low power incumbents, such as Hexagram's utility telemetry users, who require the protection of frequency coordination can **use** the

(Continued from previous page)

[192] LMCC Comments at I0: AWWA Comments at 4-5; PCIA Comments at 5

[193] PCIA Comments at 5.

[194] Motorola Comments at 8

[195] Users who operate equipment capable of transmining on both Croup C frequencies and other Pan 90 frequencies will need to obtain frequency coordinalion Tor the non-Group C frequencies and proper authorization for all the frequencies.

[196] *NPRM.* 16 FCCRcdat 14959 ¶ 26

[197] Ilexagram Comments at 8-9; Hexagram t r *Parte* at 4 (stating large systems were constructed in reliance on present rules and must be protected from itinerant users).

[198] Hexagram Comments at 9

[199] *See, e.g., id.* at 8 (agreeing in principle with the benefits of non-coordinated itinerant use of Group C low power frcqucncies).

frequcncies in low power Groups A and B. Additionally. we note that utility telemetry operators requiring special protection may operate in other bands including: the Part 90 telemetry band at 1427-1432 MHz,[200] and certain Pan 101 Multiple Address System frequencies that are reserved for private internal use (928/952/956 MHz and 932194 I MHr bands).""

4. Group D

65. *Low Power Limits* In the *NPRM*, the Commission sought comment on the LMCC's proposal lo establish a fourth set of frequencies, labeled "Group D," which would consist of five 12.5 kHz offset channel pairs for low power coordinated use.[202] The subject frequencies are primarily reserved for CSA opcrations and allow secondary telemetry operations."' Two of the channel pairs are available for central station alarm operations nationwide.'" Three channel pairs are available only for central station alarm operations in urban areas as defined by Section 90.35(c)(63) of our rules.[205] Outside of the urban areas, however, these channels are available for Industrial/Business eligibles generally.[206] The LMCC requested that these non-CSA users be permitted fixed as well as mobile operations.[207] Unlike the other Industrial/Business low power groups discussed above, however, the LMCC does not support an ERP limitation for Group D channels.[208] Rather the LMCC supports maintaining the existing 2 watt TPO standard for mobile/portable, base and fixed operations.[209]

66. Regarding thc Group A. B and C channels, we have decided, herein, to convert the current TPO standard to an ERP standard for low power operations, citing such benefits as enhancing the effectiveness of thc frequency coordination process."" **We** believe, howcver, that operation on Group D

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[200] *Srr* 47 C.F.R.§ 90.259(b).

[201] *See* 47 C.F.R. §§ 101.147(b)(1) & (2)

[202] In addition to the five 12.5 kHz channel pairs specified, the same criteria apply to the channels 6.25 kHz immediately above and below these channels.

[203] **A** central station protection service is defined as an electrical protection and supervisory service rendered to the public from and by a central station accepted and certified by one or more of the recognized rating agencies or the underwriters Laboratories (UL), or Factory Mutual Systems. ***See*** 47 C.F.R. § 90.35(c)(63). Secondary fixed **CSA** operations are allowed, with certain restrictions. on all five of these frequency pairs. *See* 47 C.F.R. § 90.35(c)(64). We also note that 466.0125 Mliz **is** available for hospital use on a secondary basis. 47 C.F.R. § 90.35(c)(69).

[204] The channel pairs 460/465.9875 MHz and 460/465.0125 MHz arc available for **CSA** operations without regard to top urban areas. 47 C.F.R. §§ 90.35(c)(66).

[205] "The channels pairs 460/465.9125 MHr. 460/465.9375 MHz. and 460/465.9625 MHz are available for CSA operations only within the boundaries of urbanized areas of 200,000 or more population. 47 C.F.R. § 90 35(c)(63).

[206] *Id.*

[207] Petition at 7, n.5

[208] LMCC Comments at I I

[209] *Id*

[111] *See* para. 13, *supra*

channels is unique and distinguishable from the other Groups, and retention of the current TPO standard thereon will most benefit users. Unlike Groups A, B and C where the majority of operations will be mobile, Group D frequencics will primarily consist of fixed operations. Therefore, for this particular case. we believe that the benefits associated with an ERP standard are offset by the fact that an ERP standard would limit the use of high gain antennas at fixed sites on Group D channels, and force Group D licensees to use Group A channels and supply individual coordinates for fixed sites requiring high gain antennas.

67. Group D channels are specifically slated for CSA operations. For the most part, CSA operators ernploy tixed transmitters licensed as mobile.[211] If we were to convert to an ERP standard on these channels. all CSA fixed transmitters licensed as mobile would need to satisfy an ERP limit established for mobile units. We have established a limit of 6 watts ERP for mobile units operating in the other Industrial/Business groups discussed above. This same 6 watt ERP limitation for Group D mobile units could limit a CSA licensee's ability to use high gain antennas at their fixed sites. Under conditions of a conversion to an ERP standard on these channels, the use of a high gain antenna in combination with 2 watts TPO would generally exceed the 6 watt EKP limit.

68. In contrast, non-CSA Industrial/Business users who wish to employ high gain antennas at fixed sites may operate on Group A channels where 20 watts ERP is permitted.[212] Such users, however, would need to license these higher power operations as fixed and supply coordinates. We have already noted that because CSA users employ such a multitude of fixed stations, supplying coordinates for each fixed sites would be an administrative burden.[213] Further. the LMCC indicates that providing coordinates to CSA fixed sites could compromise the safety of the protected premises.[214] Consequently, we believe that CSA licensees should continue to have the flexibility to employ high gain antennas at fixed sites without the added constraint of satisfying an ERP standard or providing specific coordinates. Therefore, we will continue to limit operating power on Group D frequencies to 2 watts TPO.

69. *Clarification.* In Appendix C of the *NPRM*, the Commission proposed rules for operation of Group D channels.[215] The Commission erroneously stated that all the Group D channels are available for general Industrial/Business operations outside the urban areas specified in Section 90.35(c)(63).[216] The LMCC and CSAA have asked us to clarify that certain channel pairs for Group D will continue to be available only for CSA use nationwide.[217] Consequently, we take this opportunity to clarify that the channel pairs subject to Section 90.35(c)(66) of our rules will continue to be available exclusively for CSA use nationwide.

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[211] Commenrs ofthe Central Station Alarm Associarion (CSAA) at 2 (CSAA Comments)

[212] *See* para. 24, ***supra***

[213] *See* para. 17. *supra*

[214] LMCC Comments ar 12

[215] *NPRM,* I6 FCC Kcd at 14973

[216] *Id.*

[217] LMCC Comments at 13; CSAA Comments at 5-6. The 6.25 kHz and 12.5 kHz channel pairs at issue are 460/465.98 125. 460/465.9875, 460/465.99375, 461/466.00625. 461/466.0125, 4611466.01875 *MHr.* See 47 C.F.R. § 90.35(c)(66)

70. *Note 63 Limitation.* The LMCC and the CSAA state that Section 90.35(c)(64)[218] should not be applicable to Group D channels.[219] This provision limits the maximum duration, bandwidth and number of transmissions in any 60-second period of non-voice CSA transmissions.[220] CSAA states that the provision was intended to apply to high power non-voice CSA transmissions and no longer applies to Group D frequencies, since these frequencies will be limited to low power use.[221] We agree. As CSAA indicates, the provision was carried over to the former offset channels as part of the refarming process that would have made these channels available for high power operation. Inasmuch as these channels are part of the low power plan and are not available for high power use, Section 90.35(a)(64) will not be applicable to the Group D frequencies.

5. Low Power Public Safety Pool

71. In the *NPRM,* the Commission tentatively concluded. based on LMCC's recommendation, that it should designate fourteen 12.5 kHz channel pairs for low power operations in the Public Safety Pool.[222] Inasmuch as we received no opposition to the Commission's tentative conclusion, it is hereby adopted to the extent indicated below.

72. *Power/Antenna Heights Limits.* In the *NPRM,* the Commission sought comment on power and antenna height limits for the Low Power Public Safety Group.[223] The LMCC proposes increasing the currcnt limit of 2 watts TPO to 5 watts TPO.[224] The LMCC also suggests an antenna height limit of 7 meters (20 feet) above ground for tixed stations.[225] We received no further comments regarding operations in the Low Power Public Safety Group. As we discussed previously, however, we believe that ERP limits are more appropriate here.[226] For continuity purposes, we will establish power and antenna height limits equivalent to the limits established in Groups B and C in the Industrial/Business pool. We believe these power and antenna height limits strike a proper balance between allowing sufficient power for low power public safety operations while maximizing frequency reuse. Therefore, we will implement the limits of 6 watts ERP and 7 meters (20 ft) antenna height for thc Low Power Public Safety Group. We will set the power limit for portable units. however, at 2 watts ERP in order to limit exposure to radiofrequency radiation from portable units.

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[218] 47 C.F.R. § 90.35(c)(64).

[219] LMCC Comments at 12-13: CSAA Comments at 2-5

[220] 47 C.F.R. § 90.35(c)(64)(ii), (iii) and (iv)

[221] CSAA Comments at 4

[222] Petition at 8

[223] *NPRM,* 16 FCC Rcdat 14960 ¶ 28

[224] LMCC Comments at 14.

[225] LMCC did nor comment on antenna heiyht limits discussed in lhe *NPRM* but suggested these limits in their oripinal petition prior to the *NPKM.* LMCC Petition at 8.

[226] *See* para. 14, *supra.*

73. *Station Class.* In the *NPRM,* the Commission requested comment on the LMCC's request to allow public safety licensees to license tixed stations either as "fixed' or "mobile."[227] We have previously discussed this issue and indicated that we will continue to allow all low power licensees to license multiple fixed sites as mobile units. provided that they supply areas of operation for these multiple fixed sites."[228] We proposed no funher rule changes for the Low Power Public Safety Group and received no comments suggesting further changes. Therefore, beyond the power and antenna height limits discussed above. we will make no further changes to the current operations on these frequencies.

6. Miscellaneous Matters

74. *Codification of Consensus Plan.* The Commission noted in the *NPRM,* that if it adopted the proposals and tentative conclusions described therein, it would, in effect be codifying the Consensus Plan into its Rules.[229] The Commission sought comment on whether such adoption was the ideal approach or whether it should instead establish a minimum, maximum, or absolute number of channels that the coordinators are authorized to designate for each group.[230] Commenters expressed support for codification of the Consensus Plan, stating that it would result in stability and reliability, and would encourage investment:[231] Commenters funher stated that the codification would help frequency coordinators properly administer use of the low power channels, and would prevent the possibility of future frequency coordinators that were not part of the consensus from coordinating non-compliant uses.[232] We note that in substantially adopting the LMCC's proposals, we have essentially codified the Consensus Plan. and no further action is warranted."[233]

75. *Channel Pairs.* The Consensus and Low Power Plans listed the low power channels in pairs. Under the current rules for the 450-470 MHz band, both base and mobile operation are permitted on the low side of a pair. while the high side is limited to mobile operation.[234] Applicants typically apply for one side of a pair. For example, if only mobile operation is desired, a license is granted for one side of the channel pair. usually the high side. If base and mobile operation is desired, a license is granted for the low side. In the *NPRM,* the Commission requested comment on whether it should continue this approach for the channels specified in the low power pool."[235]

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[227] *NPRM* 16 FCC Rcd at 14960 ¶ 28.

[228] ***See*** para. 17, ***supra.***

[229] ***NPRM,*** 16 FCC Rcd at 14960 ¶ 29

[230] *Id*

[231] LMCC Commcnts al 14; Toro Commenrs at 7.

[232] Motorola Comments at 2

[233] We are also revising 47 C.F.R. §§ 90.35 and 90.267 in accordance with revisions to Pan 90 that we adopted on February 12. 2003. *See* Implementation of Sections 309(j) and 337 of the Communications Act of 1934, as amended: Promotion of Spectrum Efficient Technologies on Certain Part 90 Frequencies. WT Docket No. 99-87. *Second Report and* ***Order*** *and Second Further Notice of Proposed Rule Making*, FCC 03-34 (rel. Feb. 25, 2003).

[234] *See* 47 C.F.R.§§ 90 173(i), 90.30. and 90.35

[235] *NPRM,* 16 FCC Rcd at 14960-1 ¶ 31

76. API asserts that while it recognizes that restricting the high side of a channel pair to mobile operations may facilitate frequency coordination, it nonetheless supports licensing base and mobile operations on either side of the channel pair. API reasons that if any one side of the pair is restricted, there is potential for underutilired spectrum thereon.[236] We agree. Therefore, we will allow fixed operation on either the high side or the low side of the channel pair. In order to facilitate the frequency coordination process, however, we will authorize the "slightly" higher power 20 watt ERP fixed stations only on the lower side of Group A channel pairs. Fixed stations operating on the high side of a Group A channel pair will be restricted to the mobile limit of 6 watts ERP. For applicants who require paired trequencies for base to mobile and mobilc to base communications, we will continue to authorize base and mobile operations on the low side of the pair while authorizing only mobile operations on the high side.

77. ***Directional Antenna Requirements*** Our decision to express the power limitation for mobile units in terms of ERP rather than TPO requires us to reexamine Section 90.267(a)(7) of our rules.[237] Scction 90.267(a)(7) requires that fixed stations licensed as mobile employ a directional antenna with a front to back ratio of at least 15 dB, if the fixed slation communicates with one or more associated stations located within 45 degrees of azimuth.[238] Because we have decided to convert from a TPO to an ERP standard, however, this same fixed station would also need to satisfy the ERP limit of 6 watts established for most mobilc units operating pursuant to Section 90.267.[239] In order for a station to satisfy both the front to back ratio requirement and the ERP limit, a fixed station licensed as mobile would need to employ a very small TPO. Therefore. we believe that our decision to express power limits in terms of ERP for Groups A, B aitd C, would be at odds with Section 90.267(a)(7) if it remains in effect.

78. We believe that licensees should have flexibility in choosing between antenna directionality and TPO when satisfying the ERP limits that we have established herein. Therefore we will eliminate the requirement that certain fixed stations licensed as mobile employ directional antennas with a minimum front to back ratio. Licensees may dcsign stations using any combination of TPO and antenna gain in order to satisfy the ERP requirements. We note that licensees who need to employ high gain antennas at fixed stations also will have the flexibility to operate such stations at the slightly higher power level of 20 watts ERP on Group A channels.[240] Such stations would need to be licensed as tixed rather than mobile.

79. ***Status of High Power Licensees that Coordinators Certified under Exception to Freeze.*** In the *NPRM*, the Commission requestcd comment on how it should treat entities licensed for high power operation on 12.5 kHz offset channels that are now specifically designated for low power operation.[241] Ihe Commission further requested comment on how it should handle other incumbents that may be impacted by adoption of the proposals outlined in the *NPRM*.[242] In the ***Refarming Second Report und***

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[236] **API** *Commrnls* al 12.

[237] 47 C F **K** § YO 267(a)(7)

[238] *Id.*

[239] Stations operating on Group D channels are an exccprion because Group D **will** continue to be limited in terms of TPO. See para. 9, ***supra***.

[240] *See* para. 24. *supra*

[241] *NPRM,* 16 FCC Rcd at 14961 ¶ 32

[242] *Id.*

Order, the Commission stated that prior to the lifting of the licensing freeze in the 450-470 MHz band (which was to occur only after the establishment of a low power consensus plan), new high power systems would he granted partial relief by allowing them to be licensed on any former 12.5 kHz offset channel not specifically designated for low power use.[243] Such license applications, however, were required to be accompanied by a statement from a frequency coordinator attesting that operation of a new high power system would not have an impact on any currently operating co-channel low power system.[244] Based on a review of our licensing records, it appears that subsequent to adoption of the *Refarming Second R&O*, the Commission has licensed a number of high power systems on the 12.5 kHz offset channels. It also appears that a vast number of entities that received licenses for high power operations have channels designated in the Consensus Plan for low power operation.[245]

R0. The majority of commenters were not in favor of allowing such users to remain indefinitely on these channels. citing the potential for interference to low power operations from such high power operations.[246] Both the LMCC and PCIA suggest that such users be granted a maximum of five years to vacate the band, while Toro proposes a maximum of eighteen months.[247] In contrast, ITA asserts that high power incumbents should be indefinitely grandfathered because frequency coordination procedures can protect future low power users from such incumbents."[248] We note that many of the high power incumbents operate in major metropolitan areas where comparable frequencies are not available. Given the vast number of high power incumbents already licensed on these low-power frequencies, we do not believe it would be possible to relocate all of these operations to full power frequencies. Therefore, we are concerned that if we do not grandfather these incumbent operations, many of these licensees may be forced to discontinue operations. Rather than requiring some of these licensees to discontinue existing authorizations, we will grandfather these high power stations. Our decision here is due, in large part, to our belief that future low power users can be protected from these high power operations and the lack of sufficient comparable alternative frequencies for such operations.

81. ***Frequency Coordination.*** Most of the low power groups discussed previously will be subject to frequency coordination."[249] Frequency coordination on these frequencies will be imperative to minimizing the potential for harmful interference. For example, full power stations will operate on frequencies adjacent to these low power channels. Therefore, the frequency coordinators will be rcsponsible for limiting interference from adjacent-channel high power stations to low power operations. In addition. we are allowing licensees to operate voice or non-voice low power systems on the same frequencies. We will rely on the frequency coordinators to minimize interference between voice and non-

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[243] *Refarming Second RRO,* 12 FCC Rcd at 14343 ¶ 67

[244] *Id.*

[245] *See* Appendix A to *Low Power Public Notice.* Our records indicate that the number ofhigh power operations on low power channels is as follows: 854 licensees on Group A I, 219 licensees on Group A2, 47 licensees on Group B, 194 licensees on Group C, 22 licensees on Group D and 14 licensees on the Public Safety Group. Some ofrhe high power licensees on Group A I are located outside the 50-mile circles of the lop 100 urban areas.

[246] API Comments at II; LMCC Comments at 15; PCIA Comments at 7-8; Toro Reply Comments at 7.

[247] LMCC Comments at 15; PCIA Comrnenrs ar 7-8: Toro Comments at 8

[248] ITA Comments at 4-5.

[249] *See* 47 C.F.K.§§ 90.20(c)(2), 90.35(b)(2) and 90.175(b).

voice operations. If we find. however, that frequency coordination alone can not limit the interference between voice and non-voice systems. we will consider setting aside specific channels for voice and non-voice operations.

V. CONCLUSION

82. We believe that revising our rules as indicated herein will serve the public interest by accommodating the diverse needs of the PLMR community Moreover, we believe that these rule changes will promote effective spectrum utilization and spectrum efficiency.

VI. PROCEDURAL MATTERS

A. Final Regulatory Flexibility Analysis

83. As required by Section 604 of the Regulatory Flexibility Act, 5 U.S.C. § 604. the Commission has prepared a Final Regulatory Flexibility Analysis (FRFA) of the expected impact on small entities of the rule changes implemented in this document. The FRFA is set forth in Appendix A.

B. Paperwork Reduction Act Analysis.

84. 'The actions taken in this ***Report*** *and* ***Order*** have been analyzed with respect to the Paperwork Reduction Act of 1995, Pub. L. No. 104-13, and found to impose no new or modified recordkeeping requirements or burdens on the public.

C. Alternative Formats

85. Alternative formats (computcr diskette, large print, audio cassette and Braille) are available from Brian Millin at (202) 418-7426, TTY (202) 418-7365, or at bmillin@fcc.gov. This ***Report*** *and* ***Order*** can be downloaded at http://wireless.fcc.gov/releases.html.

D. Contact for Information

86. For further information, contact Brian Marenco, Electronics Engineer, hrnarenco@,fcc.gov, or Genevieve Augustin. Esquire. gaugusti@fcc.gov, Policy and Rules Branch, Public Safety and Private Wireless Division, Wireless Telecommunications Bureau, (202) 418-0680.

VII. ORDERING CLAUSES

87. Accordingly, IT IS ORDERED that. pursuant to Sections 4(i), 303(f), 303(r), and 332 of the Communications Act of 1934. as amended. 47 U.S.C. §§ 154(i), 303(f), 303(r) and 332, this ***Report*** *and* ***Order*** IS ADOPTED.

88. IT IS FURTHER ORDERED that Part 90 of the Commission's Rules IS AMENDED as specified in Appendix B, effective 30 days after publication in the Federal Register.

84. IT IS FURTHER ORDERED that the Commission's Consumer and Governmental Affairs Bureau. Reference Information Center, SHALL SEND a copy of this *Report and* **Order** including the Final Regulatory Flexibility Analysis. to the Chief Counsel for Advocacy of the Small Business Administration.

FEDERAL COMMUNICATIONS COMMISSION

Marlene H. Dortch
Secretary

APPENDIX A

Final Regulatory Flexibility Analysis

1. As required by the Regulatory Flexibility Act (RFA) of 1980,[1] as amended, an Initial Regulatory Flexibility Analysis (IRFA) was incorporated in the *NPRM*.[2] The Commission sought written public comment on the proposals in the *NPRM*, including comment on the IRFA. This present Final Regulatory Flexibility Analysis (FRFA) conforms to the RFA.[3]

A. Need **for,** and Objectives **of the** Final **Rules:**

2. The rule changes implemented herein are needed in order to facilitate the viability of important low power operations in the 450-470 **MHr** band. Previously, low power operators were licensed on channels that were 12.5 kHz removed from regularly assignable channels in this band ("12.5 kHz offset channels"). These offset channels, however, were reclassified by the Commission for high powcr operation. Because of the continuing need for low power channels, we believe that the rule changes contained herein are in the public interest.

3. The commission's objective, the implementation of a low power plan that would suit the needs of low power users, was realized in the following manner. The Commission tasked the private land mobile radio (PLMR) frequency coordinators with developing a plan for low power operations, through industry consensus, on what was fonnerly known as the 450-470 MHz low power offset channels.[4] On June 4. 1997. the Land Mobile Communications Council (LMCC) filed the requested plan (Consensus Plan).[5] Because the LMCC's Consensus Plan required changes to the Commission's Rules, on September 11, 2000, the LMCC submitted a Petition for **Rule** Making seeking the appropriate amendments. On July 24, 2001. the Commission released a *Notice of Proposed* ***Rule Making,*** proposing amendments to Part 90 of its rules in order to effectuate the changes suggested in the Consensus Plan. The instant *Report and* ***Order*** (*R&O*) implements many of the proposed changes. Among the major rules adopted are: designation of forty-nine 12.5 kHz 450-470 MHz Industrial/Business channel pairs and one unpaired frequency for low power coordinated **use,** of which **39** channel pairs and one unpaired frequency will be available for full power at least 50 miles outside ofthe top 100 urban areas; raising of power limits for base/fixed operations on the Group A channels to 20 watts effective radiated power; designation of ten 12.5 kHz 450-470 MHz channel pairs for low power non-voice coordinated **use** nationwide, with voice operations allowed on a secondary basis: designation of twenty-five 12.5 kHz450-470 **MHz** channel pairs for low power non-coordinated use nationwide; conversion of power limits for mobile operations on frequencies in the Public Safety Group and Industrial/Business Groups A, B and C, to **6** watts effective radiated power: designation of five 12.5 kHz 350-470 MHz channel pairs for low power, coordinated use (primarily central station alarm); designation of fourteen 12.5 **kHz** channels pairs for low power use in the Public Safety Pool; and the grandfathering of high power operations currently licensed on the low power channels

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[1] *See* 5 1J.S.C.§ 603. The RFA. see 5 11.S.C. § 601-612, has been amended by the Small Business Regulatory Enforcement Fairness **Act** of 1996 (SBREFA), Pub. L. No. 104-121, Title II, 110 Stat. 857 (1996).

[2] *See NPRM,* 16 FCC Rcdat 14961-2 ¶ 35

[3] **See** 5 U.S.C. § 604.

[4] *See R&O* para. 4, *supra*

[5] *See generally* Consensus Plan

B. Legal Basis:

4. Authority for the amendments included herein is contained in Sections 4(i), 303(f), 303(r), and 332 of the Communications Act of 1934, as amended, 47 U.S.C. §§ 4(i), 303(f), 303(r), and 332.

C. Description and Estimate **of** the Number **of** Small Entities to Which the Final Rules Will **Apply:**

5. The RFA directs agencies to provide a description of, and, where feasible, an estimate of the number of small entities that may be affected by the **rules** adopted herein.[6] The **RFA** generally defines the term "small entity" as having the same meaning as the terms "small business," "small organization," and "small governmental jurisdiction."[7] In addition, the term "small business" has the same meaning as "small business concern" under the Small Business Act.[8] A "small business concern" is one which: (1) is independently owned and operated; (2) is not dominant in its field of operation; and (3) satisfies any additional criteria established by the SBA.[9]

6. *Governmental Entities* "Small governmental jurisdiction" generally means "governments of cities, counties, towns, townships, villages, school districts, or special districts, with a population of less than 50,000."[10] As of 1992, there were approximately 85,006 such jurisdictions in the United States.[11] This number includes 38,978 counties, cities, and towns; of these, 37,566, or ninety-six percent, have populations of fewer than 50,000.[12] The Census Bureau estimates that this ratio is approximately accurate for all governmental entities. **Thus,** of the 85,006 governmental entities, we estimate that 81,600 (ninety-one percent) are small entities. Below, we further describe and estimate the number of small entity licensees and regulatees that may be affected by the rule changes adopted herein.

7. ***Public** Safety Radio Services.* **As** a general matter, Public Safety Radio Pool licensees include police, fire, local government, forestry conservation, highway maintenance, and emergency medical services.[13] The SBA rules contain a definition for small radiotelephone (wireless) companies, which

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[6] 5 U.S.C. § 604(a)(3).

[7] 5 U.S.C. § 601(6).

[8] 5 U.S.C. § 601(3) (incorporating by reference the definition of "small-business concern" in the Small Business Act, 15 U.S.C. § 632). Pursuant to 5 U.S.C. § 601(3), the statutory definition of a small business applies "unless an agency, after consultation with the Office of Advocacy of the Small Business Administration and after opportunity for public comment, establishes one or more definitions of such term which are appropriate to the activities of the agency and publishes such definition(s) in the Federal Register."

[9] 5 U.S.C. § 632.

[10] 5 U.S.C. § 601(5).

[11] U.S. Dep't of Commerce, Bureau of the Census, 1992 *Census of Governments*.

[12] *Id.*

[13] *See* subparts A and B of Part 90 of the Commission's Rules, 47 C.F.R. §§ 90.1-90.22. Police licensees include 26,608 licensees that serve state, county, and municipal enforcement through telephony (voice), telegraphy (code), and teletype and facsimile (printed material). Fire licensees include 22,671 licensees comprised of private volunteer or professional fire companies, as well as units under governmental control. Public Safety Radio Pool licensees also include 40,512 licensees that are state, county, or municipal entities that use radio for official purposes. There are also 7,325 forestry service licensees comprised of licensees from state departments of conservation and private forest organizations that set up communications networks among fire lookout towers and ground crews. The 9,480 state and local governments are highway maintenance licensees that provide emergency

encompasses business entities engaged in radiotelephone communications employing no more that 1,500 persons.[14] There are a total of approximately 127.540 licensees within these services." With respect to local governments. in particular, since many governmental entities as well as private businesses comprise the licensees for these services, we include under public safety services the number of government entities afflicted.

8. *PLMR Licensees.* Private land mobile radio systems serve an essential role in a vast range of industrial, business. land transportation, and public safety activities. These radios are used by companies of all sizes operating in all U.S. business categories. Because of the vast array **of** PLMR users, the Commission has not developed a definition of small entities specifically applicable to PLMR users, nor has the SBA developed any such definition. The SBA rules do, however, contain a definition for small radiotelephone (wireless) companies.[16] Included in this definition are business entities engaged in radiotelephone communications employing no more that 1,500 persons." According to the Bureau of the Census, only twelve radiotelephone firms of a total of 1.178 such firms which operated during 1992 had 1,500 or more employees. For the purpose of determining whether a licensee *is* a small business as defined by the SBA, each licensee would need to be evaluated within its own business area. The Commission's fiscal year 1994 annual report indicates that, at the end of fiscal year 1994, there were 1.101.71 I licensees operating 12,882,623 transmitters in the PLMR bands below 512 MHz.[18]

9. ***Wireless** Communications **Equipment** Manufacturers.* We anticipate that manufacturers of wireless radio equipment will be affected by our decisions in this proceeding. According to the SBA's regulations. radio and television broadcasting and communications equipment manufacturers must have 750 or feuer employees in order to qualify as a small business concern." Census Bureau data indicate that there are 858 **U.S.** firms that manufacture radio and television broadcasting and communications equipment, and that 778 of these firms have fewer than 750 employees and would therefore be classified **its** small entities."

D. Description **of Projected** Reporting, Recordkeeping and Other Compliance Requirements:

10. No new reporting, recordkeeping, or other compliance requirements would be imposed on applicants or licensees as a result of the rules adopted in this proceeding.

(Continued from previous page)

and routine communications to aid other public safety services to keep main roads safe for vehicular traffic. Emergency medical licensees (I,460) use these channels for emergency medical service communications related to the delivery of emergency medical treatment. Anothcr 19,478 licensees include medical services, rescue organizations, veterinarians, handicapped persons, disaster relief organizations, school buses, beach patrols. establishments in isolated areas, communications standby facilities, and emergency repair of public communications facilities.

[14] *See* 13 C.F.R. § 121.201 (NAICS Code 517212, formerly NAICS Code 513322).

[15] There is no information currently available about the numbcr within the 127.540 that have less than 1500 cinployees.

[16] *See* 13 C F.R. § 121.201 (NAICSCodt.517212, formerly NAICS Code 513322).

[17] *Id*

[18] *See* Federal Communications Commission, 60th Annual Report. Fiscal Year 1994 at 120-121

[19] 13 C.F.R.§ 121.201, (NAICS Code 334220, formerly NAICS Code 334220).

[20] U.S. Dept. of Commerce, *1992 Census of Transportation, Communications and Utilities* (issued May 1995).

E. Steps Taken to Minimize Significant Economic Impact on Small Entities, and Significant Alternatives Considered:

11. The RFA requires an agency to describe any significant alternatives that it has considered in developing its approach, which may include the following four alternatives (among others): "(1) the establishment of differing compliance or reporting requirements or timetables that take into account the resources available to small entities; **(2)** the clarification, consolidation, or simplification of compliance and reporting requirements under the rule for such small entities; (3) the use of performance, rather than design standards; and (4) an exemption from coverage of the rule or any part thereof, for such small entities."

12. Regarding our rule changes increasing the power limits and antenna height for low power users operating on the 49 channel pairs and one unpaired frequency in Group A, although increasing the power and antenna height limits for low power users on these channels could decrease the number of operators possible in a given area, we believe that the need, as demonstrated in the Low Power Plan, for higher power and greater antenna height on these channels outweighs the potential for reduction of the number of licensees.[22] **An** alternative to this amendment would be to maintain the current power restriction of 2 watts output power and 7 meters antenna height, or impose power limitations less than 20 watts for base stations and 5 watts for mobile/portable stations and less than 23 meters antenna height above ground level. These alternatives, however. do not address the need, especially in hostile radio environments, for more than 2 watts output power and/or antenna heights of more than 7 meters. Moreover, since many operators in hostile radio environments are smaller entities, the rules we adopt today are especially beneficial to those entities.

13. In addition, regarding our rule changes which designate 25 channels for low power, itinerant **use** in Group C," incumbent licensees. some of which may be small entities. could face interference from itinerant users that will not be required to coordinate their operations through a certified frequency coordinator. Despite the possibility of potential interference, the need for itinerant operations in the **PLMR** services is substantiated enough to justify the risk of some increase in interference. **In** this connection, we note that small businesses that require itinerant operations, whether new entrants or incumbents, will be eligible for these channels and may benefit from our proposal.

14. Regarding our rule change allowing 5 watts ERP for the fourteen channels in the Public Safety Pool," there will be no significant adverse impact on small entities. An alternative to this change would be to maintain the current limitation of 2 watts outpul power or to impose a power limitation of less than **5** watts ERP. Neither of these alternatives, however. would be sufficient to promote flexibility for Public Safety Pool licensees that require more than 2 watts output power for their operations.

F. Federal **Rules** that May Duplicate, Overlap, or Conflict with the Final Rules:

15. None

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[21] **5** U.S.C. § 603(c)(1)-(c)(4).

[22] *See RRO* paras. 20-24. *supra*

[23] *See R&O* paras. 55-59. *supra*

[24] *See R&O* paras. 7 1-72. *supra*.

Report to Coneress: The Commission will send a copy of this ***Report and Order,*** including this FRFA, in a report to be sent to Congress pursuant to the Congressional Review Act.[25] In addition, the Commission will send a copy of this *Report* ***und Order.*** including this FRFA, to the Chief Counsel for Advocacy ot'the SBA. A copy of this ***Report*** *and* ***Order*** and FRFA (or summaries thereof) will also be published in the Federal Register.[26]

[25] *See* 5 U.S.C. § 801(a)(1)(A).

[26] *See* 5 U.S.C. § 604(b).

Frequency or band	Class of station(s)	Limitations	Coordinator
* * * * *	* * * * *	* * * * *	* * * * *
453.03125	Base or mobile	44. 59, 60, 61, 62, 84.	PM
453.0375	....do.....	27. 59, 60, 61, 62, 84.	PX
453.04375	....do.....	44. 59. 60, 61, 62. 84.	PM
* * * * *	* * * * *	* * * * *	* * * * *
453.05625	....do.....	44. 84.....	PX
453.0625	....do.....	27. 84.....	PX
453.06875	....do.....	44, 84.....	PX
* * * * *	* * * * *	* * * * *	* * * * *
453.08I25	Base or mobile	44. 59, 60. 61, 62, 84.	PM
453.0875	....do.....	27. 59, 60. 61, 62, 84.	PX
453.09375	....do.....	44, 59, 60, 61, 62, 84.	PM
* * * * *	* * * * *	* * * * *	* * * * *
453 10625	....do	44. 84.....	PX
453.1125	....do.....	27. 84.....	PX
453 I1875	....do.....	44. 84.....	PX
* * * * *	* * * * *	* * * * *	* * * * *
453.13125	Base or mobile	44, 59. 60, 61. 62, 84.	PM
453 1375	....do.....	27, 59, 60. 61, 62, 84.	PX
453 14375	do.....	44. 59, 60. 61, 62. 84.	PM
* * * * *	* * * * *	* * * * *	* * * * *
453.88125	....do.....	54. 84.....	PX
453.8875	....do.....	27, 84.....	PX
453.89375	....do.....	34. 84.....	PX

* * * * *	* * * * *	* * * * *	* * * * *
453.90625	....do.....	44, 84.....	PX
453.9125	....do.....	27, 84.....	PX
453.91875	....do.....	44, 84.....	PX
* * * * *	* * * * *	* * * * *	* * * * *
453.93125	....do.....	44, 84.....	PX
453.9375	....do.....	27, 84.....	PX
453.94375	....do.....	44. 84.....	PX
* * * * *	* * * * *	* * * * *	* * * * *
453.95625	....do.....	44, 84.....	PX
453.9625	....do.....	27. 84.....	PX
453 96815	....do.....	44. 84.....	PX
* * * * *	* * * * *	* * * * *	* * * * *
453.98125	....do.....	44, 84.....	PX
453.9875	....do.....	27, 84.....	**PX**
453.99375	....do.....	44, 84.....	PX
* * * * *	* * * * *	* * * * *	* * * * *
458.03125	Mobile.....	44, **59,** 61, 62, 84.	PM
458.0375	....do.....	27, 59, 61, 62, 84.	PX
458,04375	....**do**.....	44, 59, 61, 62, 84.	PM
* * * * *	* * * * *	* * * * *	* * * * *
458.05625	....do.....	44, 84.....	PX
458.0625	....do,.....	27. 84..	PX
458.06875	....do.....	44, 84.....	PX
* * * * *	* * * * *	* * * * *	* * * * *
458.08125	Mobile.....	44. 59, 61, 62, 84.	PM
458.0875	....do.....	27. 59, 61, 62, 84.	PX
458.09375	....do.....	44. 59, 61. 62, 84.	PM
* * * * *	* * * * *	* * * * *	* * * * *
458. 10625	....do.....	44, 84.....	PX
458.1125	....do.....	27. 84.....	**PX**
458.1 1875	....do.....	44, 84.....	**PX**
* * * * *	* * * * *	* * * * *	* * * * *
458.13125	Mobile.....	44, 59, 61, 62. 84.	PM
458. 1375	....do.....	27. 59, 61, 62, 84.	PX
1458.14375	....do.....	44. 59, 61, 62, 84.	PM
	* * * * *	* * * * *	* * * * *
458.88125	....**do**.....	44. 84.....	PX
458 8875	....do.....	27. 84.....	PX
1458.89375	....do,.....	44. 84.....	PX
* * * * *	* * * * *	* * * * *	* * * * *

458.90625	...do.....	44, 84.....	PX
458.9125	...do.....	27. 84.....	PX
458.91875	....do.....	44. 84.....	PX
* * * * *	* * * * *	* * * * *	* * * * *
	....do.....	44. 84.....	PX
	....do.....	27, 84.....	PX
	...do.....	44, 84.....	PX
	* * * * *	* * * * *	* * * * *
458.95625	....do.....	44, 84.....	PX
458.9625	....do.....	27, 84.....	PX
458.96875	...do.....	44, 84.....	PX
* * * * *	* * * * *	* * * * *	* * * * *
458.98125	....do.....	44, 84.....	PX
458.9875	....do.....	27. 84.....	PX
458.99375	....do.....	44, 84.....	PX
* * * * *	* * * * *	* * * * *	* * * * *
460.48125	....do.....	44. 84.....	PP
460.4875	...do.....	27, 84.....	PP
460.49375	....do.....	44, 84.....	PP
* * * * *	* * * * *	* * * * *	* * * * *
160.50625	.,..do.....	44. 84.....	PP
460.5 125	....do.....	27, 84.....	PP
460.51X75	....do.....	44, 84.....	PP
* * * * *	* * * * *	* * * * *	* * * * *
460.53 125	....do.....	44, 84.....	PP, PF, PM
460.5375	....do.....	27, 84.....	PP, PF, PM
460.54375	....do.....	44. 84.....	PP, PF, PM
* * * * *	* * * * *	* * * * *	* * * * *
360.55625	....do,.....	44. 84.....	PP, PF, PM
460.5625	....do.....	27, 84.....	PP, PF, PM
460.56875	....do.....	44, 84.....	PP, PF, PM
* * * * *	* * * * *	* * * * *	* * * * *
465 48125	....do.....	44, 84.....	PP
465 4875	....do.....	27. 84.....	PP
465 49375	....do.....	44. 84.....	PP
* * * * *	* * * * *	* * * * *	* * * * *
465 50625	....do.....	44, 84.....	PP
465 5 125	....do.....	27. 84.....	PP
465 5 1875	....do.....	44, R4.....	PP
* * * * *	* * * * *	* * * * *	* * * * *
465.53125	....do.....	44. 84	PP, PF. PM
465 5375	....do.....	27. 84.....	PP, PF, PM

465.54375	....do..	**44, 84**.....	**PP,** PF, PM
* * * * *	* * * * *	* * * * *	* * * * *
465 55625	....do.....	44, 84.....	PP, PF, PM
465.5625	....do.....	27, 84.....	PP, PF, PM
465.56875	....do.....	44, **84**.....	PP, PF, PM
* * * * *	* * * * *	* * * * *	* * * * *

(d) * * * * *

(84) Operation on this frequency is subject to the low power provisions of § 90.267. This frequency is assigned to the Public Safety Group in the low power pool.

* * * * *

3. Section 90.35 is amended by revising the table in paragraph (b)(3), revising paragraph (c)(67) and adding new paragraphs (c)(83), (c)(84), (c)(85), (c)(86) and (c)(87):

§ *90.35* Industrial/Business Pool.

* * * * *

(b) * * * * *

(3) * * *

INDUSTRIAL/BUSINESS POOL FREQUENCY TABLE

Frequency or band	Class of station(s)	Limitations	Coordinator
* * * * *	* * * * *	* * * * *	* * * *
451.18125	....do.....	33, **84**.....	
451.1875	.... do.....	83, **84**.....	
451.19375	...do.....	33. **84**.....	
* * * * *	* * * * *	* * * * *	
451.23125	....do.....	33, **84**.....	
451.2375	...do.....	83, **84**.....	
451.24375	....do.....	33, **84**.....	
* * * * *	* * * * *	* * * * *	
451.28125	....do.....	33, **84**.....	
451.2875	...do.....	83, **84**.....	
451.29375	.... do.....	33. 84.....	
* * * * *	* * * * *	* * * * *	
451.30625	....do.....	33, 84.....	
451.3125	....do.....	83, 84.....	
451.31875	....do.....	33, 84.....	
* * * * *	* * * * *	* * * * *	
451.33125	....do.....	33. **84**.....	
451.3375	...do.....	83. 84.....	
451.34375	...do.....	33. **84**.....	
* * * * *	* * * * *	* * * * *	

451.35625	....do.....	33. 84.....
451.3625	...do.....	83, 84.....
451.36875	...do.....	33, 84.....
* * * * *	* * * * *	* * * * *
451.38125	....do.....	33. 84.....
451.3875	....do.....	83, 84.....
451.39375	....do.....	33, 84.....
* * * * *	* * * * *	* * * * *
45 1.40625	....do.....	33, 84.....
451.4125	....do.....	83, 84.....
451.4 1875	....do.....	33, 84.....
* * * * *	* * * * *	* * * * *
451.43125	....do.....	13. 84.....
451.4375	....do.....	33, 84.....
451.44375	....do.....	33, 84.....
* * * * *	* * * * *	* * * * *
451.45625	....do.....	13, 84.....
451,4625	....do.....	13, 84.....
451.46875	....do.....	33. 84.....
* * * * *	* * * * *	* * * * *
451.48125	....do.....	13, 84.....
451.4875	....do.....	13. 84.....
451.49375	....do.....	33. 84.....
* * * * *	* * * * *	* * * * *
451.50625	....do.....	33, 84.....
451.5 125	...do.....	33, 84.....
451.5 I875	...do.....	33. 84.....
* * * * *	* * * * *	* * * * *
451.53125	...do.....	33, 84.....
451.5375	...do.....	33. 84.....
451.54375	...do.....	33, 84.....
* * * * *	* * * * *	* * * *
451.55625	...do.....	, 7. 33. 84
451.5625	..do.....	. 7, 83. 84.
451.56875	...do.....	. 7, 33. 84.
* * * * *	* * * * *	* * * *
451.58125	...do.....	3. 84.....
451.5875	...do.....	3, 84 .....
451.59375	...do.....	3, 84.....
* * * * *	* * * * *	* * * *
451.60625	...do.....	3. 7. 33. 84.

451.6125	...do.....	4, 7, 83, 84.
451.61875	....do.....	4, 7, 33, 84.
* * * * *	* * * * *	* * * * *
451.63125	...do.....	33, 84.....
451.6375	...do.....	83, 84.....
451.64375	....do.....	33. 84.....
* * * * *	* * * * *	* * * * *
451.65625	....do.....	4, 7, 33. 84.
451.6625	....do.....	4, 7, 83, 84.
451.66875	....do.....	4, 7, 33, 84.
* * * * *	* * * * *	* * * * *
451.68125	....do.....	33, 84.....
451.6875	....do.....	83, 84.....
451.60375	....do.....	33, 84.....
* * * * *	* * * * *	* * * * *
451.70625	....do.....	4, 7, 33. 84.
451.7125	....do.....	4, 7. 83, 84.
451.71875	....do.....	4, 7, 33, 84.
* * * * *	* * * * *	* * * * *
451.73125	....do.....	33, 84.....
451.7375	....do.....	83, 84.....
451.74375	....do.....	33, 84.....
* * * * *	* * * * *	* * * * *
451.75625	....do.....	4, 7. 33, 84.
451.7625	....do.....	4, 7, 83. 84.
451.76875	....do.....	4. 7. 33, 84.
* * * * *	* * * * *	* * * * *
452.03125	....do.....	33. 84.....
452.0375	....do.....	83, 84.....
452.04375	....do.....	33. 84.....
* * * * *	* * * * *	* * * * *
452.05625	....do.....	33. 84.....
452,0625	..do.....	83. 84.....
452.06875	....do.....	33, 84.....
* * * * *	* * * * *	* * * * *
4.52.08125	...do.....	33. 84.....
452.0875	...do.....	53, 84.....
452.09375	...do.....	33, 84.....
* * * * *	* * * * *	* * * * *
452.10625	...do.....	13, 84.....
152.1125	...do.....	33, 84.....
452.11875	...do.....	13. 84.....

* * * * *	* * * * *	* * * * *	
452.13125	....do.....	33, 84.....	
452.1375	....do.....	83. 84.....	
452.14375	....do.....	33, 84.....	
* * * * *	* * * * *	* * * * *	
452.15625	....do.....	33, 84.....	
452.1625	....do.....	83, 84.....	
452.16875	....do.....	33, 84.....	
* * * * *	* * * * *	* * * * *	
452.18125	....do.....	33. 84.....	
452. 1875	....do.....	83, 84.....	
452.19375	....do.....	33, 84.....	
* * * * *	* * * * *	* * * * *	
452.28125	....do.....	33, 84.....	
452.2875	....do.....	83, 84.....	
152.29375	....do.....	33. 84.....	
* * * * *	* * * * *	* * * * *	
452.30625	....do.....	33, 84.....	
152.3125	....do.....	83, 84.....	
152.31875	....do.....	33, 84.....	
* * * * *	* * * * *	* * * * *	
152.10625	....do.....	33, 84.....	
152.4125	....do.....	83. 84.....	
152.41875	....do.....	33. 84.....	
* * * * *	* * * * *	* * * * *	
452.48125	....do.....	33, 84.....	
452.4875	....do.....	83, 84.....	
152 19375	....do.....	33, 84.....	
* * * * *	* * * * *	* * * * *	
152.50625	....do.....	33. 84.....	
452.5125	....do.....	83. 84.....	
152.51875	....do.....	33, 84.....	
* * * * *	* * * * *	* * * * *	
452.53125	....do.....	33. 84.....	.A
152.5375	....do.....	83. 84.....	.A
452.54375	....do.....	33, 84.....	.A
* * * * *	* * * * *	* * * * *	* * * *
152.63125	....do.....	$3. 84.....	
452.6375	....do.....	33. 84.....	
452.64375	....do.....	33, 84.....	
* * * *	* * * * *	* * * * *	

452.65625	....do.....	33, 84.....
452.6625	....do.....	83, 84.....
452.66875	....do.....	33. 84.....
* * * * *	* * * * *	* * * * *
452.68125	....do.....	33, 84.....
452.6875	....do.....	83. 84.....
452.69375	....do.....	33, 84.....
* * * * *	* * * * *	* * * * *
452.70625	...do.....	33, 84.....
452.7125	....do.....	83. 84.....
452.71875	....do.....	33, 84.....
* * * * *	* * * * *	* * * * *
452.15625	....do.....	33, 84.....
452.7625	...do.....	83, 84.....
452.76875	....do.....	33, 84.....
* * * * *	* * * * *	* * * * *
452.78125	....do.....	33, 84.....
452.7875	....do.....	83, 84.....
452.79375	....do.....	33, 84.....
* * * * *	* * * * *	* * * * *
452.80625	....do.....	33, 84.....
452.8125	....do.....	83, 84.....
452.81875	....do.....	33. 84.....
* * * * *	* * * * *	* * * * *
452.83125	....do.....	33, 84.....
452.8375	....do.....	83, 84.....
452.84375	... do.....	33, 84.....
* * * * *	* * * * *	* * * * *
452.85625	...do.....	33, 84.....
452.8625	...do.....	83, 84.....
452.86875	...do.....	33. 84.....
* * * * *	* * * * *	* * * * *
152.88125	...do.....	33, 84.....
452.8875	...do.....	83, 84.....
452.89375	...do.....	33, 84.....
* * * * *	* * * * *	* * * * *
152.98125	...do.....	33. 84.....
152.9875	...do.....	33, 84.....
152.99315	...do.....	33. 84.....
* * * * *	* * * * *	* * * * *
156.18125	...do.....	33, 84.....
156.1875	...do.....	83, x4.....

456.19375	....do.....	33, 84.....
* * * * *	* * * * *	* * * * *
456.23125	....do.....	33. 84.....
456.2375	....do.....	83, 84.....
456.24315	...do.....	33, 84.....
* * * * *	* * * * *	* * * * *
456.28125	...do.....	33, 84.....
456.2875	....do.....	83, 84.....
156.29315	....do.....	33, 84.....
* * * * *	* * * * *	* * * * *
456.30625	....do.....	33, 84.....
456.3125	....do.....	83, 84.....
456 3 1875	....do.....	33, 84.....
* * * * *	* * * * *	* * * * *
456.33 125	....do.....	33, 84.....
456.3375	....do.....	83, 84.....
456.34375	....do.....	33, 84.....
* * * * *	* * * * *	* * * * *
456.35625	....do.....	33. 84.....
456.3625	...do.....	83, 84.....
456.36875	...do.....	33, 84.....
* * * * *	* * * * *	* * * * *
456.38125	...do.....	33, 84.....
456.3875	...do.....	83, 84.....
456.39375	...do.....	33, 84.....
* * * * *	* * * * *	* * * * *
456.40625	...do.....	33. 84.....
156.4 125	...do.....	83, 84.....
156 1875	...do.....	13, 84.....
* * * * *	* * * * *	* * * * *
456 43125	...do.....	13, 84.....
456 4375	...do.....	13. 84.....
456.44375	...do.....	13, 84.....
* * * * *	* * * *	* * * * *
156 45625	...do.....	13. 84.....
156.1625	...do.....	13. 84.....
156 16875	...do.....	33. 84.....
* * * * *	* * * *	* * * * *
156 48125	...do.....	33, 84.....
156.4875	...do.....	53. 84.....
156.49315	....do.....	33, 84.....
* * * *	* * * * *	* * * *

156.50625	.,..do.,.....	33, 84.....	
156.5125	....do..	83, 84.....	
456.51875	....do.....	33, 84.....	
* * * * *	* * * * *	* * * * *	
456.53125	....do.....	33, 84.....	
456.5375	....do.....	83. 84.....	
456.54375	....do.....	33, 84.....	
* * * * *	* * * * *	* * * * *	
456.55625	....do.....	33, 84.....	
456.5625	....do.....	**83,** 84.....	
456.56875	....do.....	33, 84.....	
* * * * *	* * * * *	* * * * *	
456.58125	....do.....	33, 84.....	
456.5875	....do.....	83, 84.....	
456.59375	....do.....	33, 84.....	
* * * * *	* * * * *	* * * * *	
456.60625	....do.....	**33,** 84.....	
456.6125	....do.....	83, 84.....	
456.61875	....do.....	33, 84.....	
* * * * *	* * * * *	* * * * *	
456.63125	....do.....	33, 84.....	
456.6375	....do.....	83, 84.....	
456.64375	....do.....	33. 84.....	
* * * * *	* * * * *	* * * * *	
456.65625	....do.....	33, 84.....	
456.6625	....do.....	**83,** 84.....	
456.66875	....do.....	33, 84.....	
* * * * *	* * * * *	* * * * *	
456.68125	....do.....	33, 84.....	
456.6875	....do.....	83, 84.....	
456.69375	....do.....	33, 84.....	
* * * * *	* * * * *	* * * * *	
456.10625	....do.....	33, 84.....	
456.7125	....do.....	83, 84.....	
456.71875	....do.....	33. 84.....	
* * * * *	* * * * *	* * * * *	
456.73125	...do.....	33, 84.....	
456.1375	...do.....	83, 84.....	
456.74375	...do.....	33, 84.....	
* * * * *	* * * * *	* * * * *	
456.15625	...do.....	13. 84.....	

456.7625	....do.....	83, 84.....
456.76875	....do.....	33, 84.....
* * * * *	* * * * *	* * * * *
457.03125	....do.....	33, 84.....
457.0375	...do.....	83. 84.....
457.04375	....do.....	33, 84.....
* * * * *	* * * * *	* * * * *
457.05625	....do.....	33, 84.....
457.0625	....do.....	83. 84.....
457.06875	....do.....	33, 84.....
* * * * *	* * * * *	* * * * *
457.08125	....do,.....	33. 84.....
457.0875	....do.....	83, 84.....
457.09375	....do.....	33, 84.....
* * * * *	* * * * *	* * * * *
457.10625	....do.....	33. 84.....
457.1125	....do.....	83. 84.....
457.11875	....do,.....	33. 84.....
* * * * *	* * * * *	* * * * *
457.13125	....do.....	33. 84.....
457.1375	....do.....	83. 84.....
457.14375	....do.....	33. 84.....
* * * * *	* * * * *	* * * * *
457.15625	....do.....	33. 84.....
457.1625	....do.....	83. 84.....
457.16875	....do.....	33. 84.....
* * * * *	* * * * *	* * * * *
457.18125	....do.....	33. 84.....
457.1875	....do.....	83. 84.....
457.19375	....do.....	33. 84.....
* * * * *	* * * * *	* * * * *
457.28125	..do.....	33, 84.....
457.2875	..do.....	83. 84.....
457.29375	...do.....	33, 84.....
* * * * *	* * * * *	* * * * *
457.3063	...do.....	33. X4.....
157.3125	...do.....	33. 84.....
457.31875	...do.....	33, 84.....
* * * * *	* * * * *	* * * * *
457.40625	...do.....	33, 84.....
457.4125	...do.....	33, 84.....
457.41875	...do.....	33. 84.....

* * * * *	* * * * *	* * * * *
457.48 125	....do.....	33, 84.....
457.4815	....do.....	83. 84.....
457.49375	....do.....	33, 84.....
* * * * *	* * * * *	* * * * *
451.50625	....do.....	33, 84.....
457.5125	....do.....	83. 84.....
457.5I815	....do.....	33, 84.....
* * * * *	* * * * *	* * * * *
457.63125	...do.....	33, 84.....
457.6375	....do.....	83, 84.....
457.64315	....do.....	33, 84.....
* * * * *	* * * * *	* * * * *
451.65625	...do.....	33, 84.....
457.6625	...do.....	83, 84.....
457.66875	..do.....	33, 84.....
* * * * *	* * * * *	* * * * *
457.68125	...do.....	33, 84.....
457.6875	...do.....	53, 84.....
157.69375	...do.....	13. 84.....
* * * * *	* * * * *	* * * * *
157.70625	...do.....	13, 84.....
457.7125	...do.....	33, 84.....
457.7I815	...do.....	13, 84.....
* * * * *	* * * * *	* * * * *
457.75625	...do.....	13. 84.....
457.7625	...do.....	33, 84.....
151.76815	...do.....	33, 84.....
* * * * *	* * * * *	* * * * *
457.78125	...do.....	13. 84.....
151.7815	..do.....	$3.84.....
251.19315	...do.....	13. 84.....
* * * * *	* * * * *	* * * * *
357.80625	...do.....	33, 84.....
157.8I25	...do.....	13, 84.....
157.81815	..do.....	i3, 84.....
* * * * *	* * * * *	* * * * *
157.83 I25	...do.....	3, 84.....
157.8375	...do.....	3. 84.....
157.84375	...do.....	3, 84.....
* * * * *	* * * * *	* * * * *

457.85625	....do.....	33, 84.....
457.8625	....do.....	83. 84.....
457.86875	....do.....	33, 84.....
* * * * *	* * * * *	* * * * *
457.88125	....do.....	33, 84.....
457.8875	....do.....	83, 84.....
457.89375	....do.....	33, 84.....
* * * * *	* * * * *	* * * * *
457.98125	....do.....	33. 84.....
457.9875	....do.....	83. 84.....
457.99375	....do.....	33, 84.....
* * * * *	* * * * *	* * * * *
460.90625	....do.....	33, 63, 65, 87.
460.91125	....do.....	63, 65, 83, 87.
460.91875	....do.....	33, 63, 65, 87.
* * * * *	* * * * *	* * * * *
460.93125	....do.....	33, 63, 65, 87.
460.9375	....do.....	63. 65, 83, 87.
460.94375	....do.....	33, 63, 65, 87.
* * * * *	* * * * *	* * * * *
460,95625	....do.....	33. 63, 65, 87.
460.9625	....do.....	63. 65. 83, R7.
460.96875	....do.....	33, 63, 65, 87.
* * * * *	* * * * *	* * * * *
460.98125	....do.....	33, 65, 66. 87.
460.9875	....do.....	65. 66, 83, 87.
460.99375	....do.....	33. 65, 66. 87.
* * * * *	* * * * *	* * * * *
461.00625	..do.....	33. 65. 66, 87.
461.0125	....do.....	65. 66. 83, 87.
461.01875	....do.....	33, 65. 66, 87.
* * * * *	* * * * *	* * * * *
461.03125	Mobile.....	33, 86.....
461.0375	...do.....	83. 86.....
461.04375	...do.....	33, 86.....
461.050	Base or mobile	62.....
461.05675	Mobile.....	33. 86.....
461.0615	...do.....	83, R6.....
461.06875	...do.....	33, 86.....
461.075	Base or mobile	62.....
461.08115	Mobile.....	33. Xh.....
461.0875	...do.....	33. 86.....
461.09375	...do.....	33, 86.....
461,100	Base or mobile	62.....

461.10625.	Mobile.....	33, 86.....
461.1 125	....do.....	83, 86.....
461.11875	....do.....	33, 86.....
461.125	Base or mobile	62.....
461.13125	Mobile.....	33, 86.....
161.1375	...do.....	83, 86.....
461. 14375	....do.....	33, 86.....
461.150	Base or mobile	62.. .....
461.15625	Mobile.....	33, 86.....
461.1625	....do.....	83, 86.....
461.16875	....do.....	33, 86.....
461.175	Base or mobile	62.....
461.18125	Mobile.....	33, 86.....
461.1875	....do.....	83, 86.....
461.19375	....do.....	33, 86.....
461.200	Base or mobile	62.. .....
461.20625	Mobile.....	33, 86.....
461.2125	....do.....	83, 86.....
461.21875	....do.....	33, 86.....
461.225	Base or mobile	62.. .....
461.23125	Mobile.....	33, 86.....
461.2375	....do.....	83, 86.....
461.24375	....do.....	33, 86.....
461.250	Base or mobile	62.....
461.25625	Mobile.....	33, 86.....
461.2625	....do.....	83. 86.....
461.26875	....do.....	33, 86.....
461.215	Rase or mobile	62.. .....
461.28125	Mobile.....	33, 86.....
461.2875	....do.....	83, 86.....
461.29375	....do.....	33, 86.....
461.300	**Base** or mobile	62.. .....
461.30625	Mobile.....	33, 86.....
461.3125	....do.....	83, 86.....
461.31875	....do.....	33, 86.....
461.325	Base or mobile	62.....
461.33125	Mobile.....	33, 86.....
461.3375	....do.....	83, 86.....
461.34375	....do.....	33, 86.....
461.350	Base or inobile	62.. .....
461.35625	Llobile.....	33, 86.....
461.3625	....do.....	83. 86.....
461.36875	,...do.....	33, 86.....
461.375	Base or inobile	62.....
* * * * *	I * * * *	I * * * *
462.18125	...do.....	13, 84.....
162.1875	...do.....	33, 84.....
162.10375	...do.....	13. 84.....
* * * * *	* * * * *	* * * * *
162.20625	...do.....	13. 85.....

462.2125	....do.....	83. 85.....
462.21875	....do.....	33. 85. .....
* * * * *	* * * * *	* * * * *
462 23 152	....do.....	33, 85.....
462 2375	....do.....	83. 85.....
462 24375	....do.....	33, 85.....
* * * * *	* * * * *	* * * * *
462 25625	....do.....	33. 85.....
462 2625	....do.....	83, 85.....
462 26815	....do.....	33, 85.....
* * * * *	* * * * *	* * * * *
462 28125	....do.....	33, 85.....
462 2875	....do.....	83, 85.....
	....do.....	33, 85.....
	* * * * *	* * * * *
462.30625	....do.....	33, 85.....
462.3125	....do.....	83, 85.....
462.3 1875	....do.....	33, 85.....
* * * * *	* * * * *	* * * * *
462.33 125	....do.....	33, 85.....
462.3315	....do.....	83, 85.....
462.34375	....do.....	33, 85.....
* * * * *	* * * * *	* * * * *
462.35625	....do.....	33. 85.....
462.3625	....do.....	83, 85.....
462.36875	....do.....	33, 85.....
* * * * *	* * * * *	* * * * *
462.38125	....do	33, 85.....
462.3875	....do.....	83. 85.....
462.39375	....do.....	33, 85.....
* * * * *	* * * * *	* * * * *
462.40625	....do	33. 85.....
462.4125	....do.....	83, 85.....
462.41875	....do.....	33, 85.....
	* * * * *	* * * * *
462.43125	....do.....	33. 85.....
462 4375	....do.....	83. 85.....
462.44375	....do.....	33, 85.....
* * * * *	* * * * *	* * * * *
462.45625	....do.....	33, 84.....
462.4675	....do.....	83, 84.....
462 46875	....do.....	33, 84.....

* * * * *	* * * * *	* * * * *
462.48125	....do.....	33. 84.....
462.4875	....do.....	83. 84.....
462.49375	....do.....	33, 84.....
* * * * *	* * * * *	* * * * *
462.50625	....do.....	33. 84.....
462.5125	....do.....	83. 84.....
462.51875	....do.....	33. 84.....
* * * * *	* * * * *	* * * * *
462.1625	Mobile.	61, 86.....
* * * * *	* * * * *	* * * * *
462.7875	Mobile.	67, 86...
* * * * *	* * * * *	* * * * *
462.8125	Mobile.	67, 86.....
* * * * *	* * * * *	* * * * *
462.8375	Mobile..	67, 86...
* * * * *	* * * * *	* * * * *
462.8625	Mobile.....	67, 86...
* * * * *	* * * * *	* * * * *
462.8815	Mobile.	57, 86...
* * * * *	* * * * *	* * * * *
462.9125	Mobile.	57. 86...
* * * * *	* * * * *	* * * * *
162.0375	Mobile..	38.....
* * * * *	* * * * *	* * * * *
464.48125	Mobile.....	13. 86.....
164.4875	....do.....	13. 86.....
164500	Basc or mobile	10, 34.....
164.5125	Mobile.....	33. 86.....
164.5 I875	....do.....	13. 86.....
164.525	Basc or mobile	32.....
464.53125	Mobile.....	33, 86.....
164.5375	....do.....	13, 86.....
164.580	Base or mobile	0, 34.....
164.5625	Mobile.....	33, 86.....
164.56875	...do.....	3. 86.....
* * * * *	* * * * *	* * * *
464.9875	Mobile...	* * * * *
* * * *	* * * * *	

465.0125	Mobile..	88.....
* * * * *	* * * * *	* * * * *
465.90625	....do.....	33, 63, 87.....
465.9125	...do.....	63. 83, 87.....
465.91875	...do.....	33. 63, 87.....
* * * * *	* * * * *	* * * * *
465.93125	....do.....	33, 63, 87.....
365.9375	...do.....	63, 83, 87.....
165.94375	....do.....	33, 63, 87.....
* * * * *	* * * * *	* * * * *
465.95625	....do.....	33, 63, 87.....
465.9625	...do.....	63, 83, 87.....
465.96875	....do.....	33, 63, 87.....
* e * * *	* * * * *	* * * * *
465.98125	...do.....	33, 66, 87.....
165.9875	...do.....	66. 83, 87.....
465.99375	...do.....	33, 66, 87.....
* * * * *	* * * * *	* * * * *
166.00625	...do.....	33, 66, 87.....
466.0125	...do.....	66, 69, 83, 87.
466.01875	...do.....	33. 66. 87.....
* * * * *	* * * * *	* * * * *
166.03125	...do.....	33. 86.....
466.0375	...do.....	83, 86.....
166.04375	...do.....	33. 86.....
* * * * *	* * * * *	* * * * *
166.05625	...do.....	33. 86.....
166.0625	...do.....	83, 86.....
466.06875	...do.....	33, 86.....
* * * * *	* * * * *	* * * * *
166.08125	...do.....	13, 86.....
166.0875	...do.....	53. 86.....
466.09375	...do.....	33. 86.....
* * * * *	* * * * *	* * * * *
466.10625.	...do.....	33. 86.....
166.1125	...do.....	33. 86.....
166.11875	...do.....	33. 86.....
* * * * *	* * * * *	* * * * *
166.13125	...do.....	33. 86.....
166.1375	...do.....	33. 86.....
166.14375	...do.....	33. 86.....
* * * * *	* * * * *	* * * * *

466.15625	....do.....	33. 86.....	
466.I625	....do.....	83, 86.....	
466.16875	....do.....	33. 86.....	
* * * * *	* * * * *	* * * * *	
466.18125	....do.....	33, 86.....	
466.I875	....do.....	83, 86.....	
466.19375	....do.....	33. 86.....	
* * * * *	* * * * *	* * * * *	
466.20625	....do.....	33. 86.....	
466.2125	....do.....	83, 86.....	
466.21875	....do.....	33, 86.....	
* * * * *	* * * * *	* * * * *	
466.23125	....do.....	33, 86.....	
466.2375	....do.....	83, 86.....	
466.24375	....do.....	33. 86.....	
* * * * *	* * * * *	* * * * *	
466.25625	....do.....	33, 86.....	
166.2625	....do.....	83, 86.....	
466.26815	....do.....	33, 86.....	
* * * * *	* * * * *	* * * * *	
466.28125	....do.....	33, 86.....	
466.2875	....do.....	83. 86.....	
466.29375	....do.....	33, 86.....	
* * * * *	* * * * *	* * * * *	
466.30625	....do.....	33, 86.....	
466.3 125	....do.....	83, 86.....	
466.3 I815	....do.....	33, 86.....	
* * * * *	* * * * *	* * * * *	
466.33125	....do.....	33, 86.....	
466.3375	....do.....	83. 86.....	
466.34375	....do.....	33, 86.....	
* * * * *	* * * * *	* * * * *	
166.35625	....do.....	33, 86.....	
466.3625	....do.....	83. 86.....	
466.36815	....do.....	33, 86.....	
* * * * *	* * * * *	* * * * *	
167.18125	....do.....	33, 84.....	
467. I875	....do.....	83, 84.....	
167.I9375	....do.....	33. 84.....	
* * * * *	* * * * *	* * * * *	
467.20625	....do.....	13.85.....	

467.2125	....do.....	83, 85.....
467.21875	....do.....	33, 85.....
* * * * *	* * * * *	* * * * *
467.23 I52	...do.....	33, 85.....
467.2315	....do.....	83. 85.....
167.24375	....do.....	33, 85.....
* * * * *	* * * * *	* * * * *
461.25625	....do.....	33. 85.....
467.2625	....do.....	83. 85.....
467.26875	....do.....	33. **85**.....
I * * + *	* * * * *	* * * * *
467.28125	....do.....	33. 85.....
467.2875	....do.....	83, 85.....
467.29375	....do.....	33, 85.....
* * * * *	* * * * *	* * * * *
467.30625	....do.....	33, 85.....
467.3 I25	....do.	83, *85*.....
467.31875	....do.....	33, 85.....
* * * * *	* * * * *	* * * * *
467 33125	....do	33, 85.....
467 3375	....do.....	83. 85.....
467 34375	....do.....	33. 85.....
* * * * *	* * * * *	* * * * *
467.35625	....do.....	33, 85.....
461.3625	do.....	83, 85.....
467 36875	....do.....	33, 85.....
* * * * *	* * * * *	* * * * *
467.38I25	....do.....	33. 85.....
467.3875	....do.....	83, 85.....
467 39375	....do.	33, 85.....
* * * * *	* * * * *	* * * * *
467 40625	...do.....	33. 85.....
467 4 I25	....do.....	83, 85.....
467 41875	....do..	*33. 85*.....
* * * * *	* * * * *	* * * * *
467.43125	...do.....	33, 85.....
461 1375	...do.....	83. 85.....
467.44375	... do.....	33, 85.....
* * * * *	* * * * *	* * * * *
467 45625	...do.....	33, 84.....
467 4625	...do.....	83. 84.....
467 46875	...do.....	33, 84.....

* * * * *	* * * * *	* * * * *	
467 48125	... .do.....	33, 84.....	
467 4875	....do.....	83, 84.....	
467.49375	... .do.....	33, 84.....	
* * * * *	* * * * *	* * * * *	
467.50625	... .do.....	33, 84.....	
467.5125	... .do.....	83, 84.....	
467.5 I875	....do.....	33, 84.....	
* * * * *	* * * * *	* * * * *	
467.8625	....do.....	67, 86...	
* * * * *	* * * * *	* * * * *	
467.8875	...do.....	67, 86...	
* * * * *	* * * * *	* * * * *	
467.9125	....do.....	67, 86.....	
* * * * *	* * * * *	* * * * *	
467 9375	....do.....	88.....	
* * * * *	* * * * *	* * * * *	
469 48 I25	... .do.....	33, 86.....	
469.4875	....do.....	83. 86.....	
* * * * *	* * * * *	* * * * *	
469.5125	....do.....	**83,** 86.....	
469.5 I875	...do.....	33, 86.....	
* * * * *	* * * * *	* * * * *	
469.53125	....do.....	33, 86.....	
469.5375	....do.....	83, 86.....	
* * * * *	* * * * *	* * * * *	
469.5625	... .do.....	83, 86.....	
469.56875	....do.....	33, 86.....	
* * * * *	* * * * *	* * * * *	

(c) * * * * *

(67) Medical telemetry operations are authorized on this frequency on a secondary basis. Medical telemetry operations are subject to the provisions *of* § 90.267(h)(2). Itinerant operations on this frequency will be prohibited until the end of the freeze on the tiling of high power applications for 12.5 kHz offset channels iii the 460-470 **MHz** band.

* * * * *

(83) Telemetry operations on this frequency will be authorized pursuant lo $90.267

(84) Operation on this frequency is subject to the low power provisions of § 90.267. This frequency is assigned to Group A in the low power pool.

(85) Operation on this frequency is subject to the low power provisions of § 90.267. This frequency is assigned to Group B in the low power pool.

(86) Operation on this frequency is subject to the low power provisions of § 90.267. This frequency is assigned to Group C in the low power pool.

(87) Operation on this frequcncy is subject to the low power provisions of § 90.267. This frequency is assigned to Group D in the low power pool.

(88) Use ofthis frequency is on a secondary basis limited to 2 watts output power and subject to the provisions of § 90.267(h)(1). (h)(2), (h)(3) and (h)(4).

* * * * *

4. Section 90.238 is amended by revising paragraphs (g) and (i) to read as follows:

590.238 Telemetry operations.

* * * * *

(g) 450-470 Mtlz band (as availablc for secondary fixcd operations in accordance with § 90.261 and for low power operations in accordance with § 90.267).

* * * * *

(i) For Industrial/Business frequencies which are not governed by paragraphs (a) through (h), on frequencies available for operations up to 2 watts.

* * * * *

5. Section 90.261 is amended by revising paragraph (t) to read as follows:

390.261 Assignment and use *of* thc frequencies in the band **450-470 MHr for** fixed operation.

* * * * *

(I) Secondary fixcd operations pursuant to paragraph (a) ofthis section will not be authorized on the following frequencies or on frequencies subjcct to § 90.267:

* * * * *

6. Section 90.267 is amended to read **as** follows:

§ 90.267 Assignment and **use *of*** frequencies **in** the **450-470 MHz** band **for** low power USE.

(a) The following frequencies between 450-470 MHr arc designated for low-power use subject to the provisions ofthis section For purposes of this section these frequencies are referred to as "low power frequencies." Pairs are shown but single frequencies are available for simplex operations.

(b) *Group AI Frequencies.* The Industrial/Business Pool frequencies in Group A1 are available on a coordinated basis, pursuant to §90.35(b)(2) and § 90.175(b), as follows:

(1) Group **A1** frequencies are available tor voice and noli-voice operations on a co-primary basis. Rase. mobile and operational fixed stations will be authorized on Group A1 frequencies. Fixed stations may be licensed as mobile.

(2) Within 80 kiloineters (50 miles) of the specified coordinates of the top 100 urban areas listed in § 90.741 of this chapter ("80 km circles") only low power operation will be authorized. The coordinates of an operational fixed or base station and the geographic center (latitude and longitude) of a mobile area of operation determine whether a station is within an "80 km circle."

(i) The maximum ERP for low power operation on Group **A1** frequencies **is** as follows:

Operation	Low side of freauency pair	High side of frequencv pair
Operational Fixed or Base	20 watts	6 watts
Mobile	6 watts	6 watts
Portable	2 watts	2 watts

(ii) The maximum antenna height for low power fixed stations on Group **A1** frequencies will be 23 meters (75 feet) above ground.

(3) Outside the "80 km circles" defined in paragraph (b)(2), full-power operational fixed, base, or mobile stations will he authorized as follows:

(i) power and antenna height limits are governed by § 90.205 of this chapter;

(ii) for any operational fixed. base or mobile station exceeding the low power or antenna height limits listed in paragraph (b)(2), the 21 dBu F(50,10) contour may not overlap any portion of an "80 km circle:" and.

(iii) wide area operations will not be permitted. The area of normal day-to-day operations will be described in the application in terms of maximum distance from a geographic center (latitudc and longitude)

(4) The Industrial/Business Pool Group **A1** Low Power Frequencies are as follows:

4511456.18125	451/456.58125	4521457.I0625	4521457.70625
451/456.1875	45 11456.5875	4521451.I125	4521457.7125
451/456.19375	45 11456.59375	452/457.I I875	452/457.71875
451/456.28125	451/456.60625	4521451.I3125	4521451.78125
45 11456.2875	4511456.6125	452/457.1375	4521457.7875
4511456.29375	45 Il456.61875	4521457.14375	452/457.79375
451/456.30625	451/456.65625	4521457.I5625	452457.80625
4511456.3125	45 11456.6625	4521451.1625	4521457.8125
1511456.31875	451/456.66875	452f457.16875	452/457.81875
45 11456.35625	451/456.68125	4521457.18125	4521457.83125
45 11456,3625	45 11456.6815	452/457.1875	452/457.8375

45 11456.36875	45 11456.69375	452/457.19375	4521457.84375
1511456.38125	45 11456.70625	*4521451.28* I25	4521457.88 125
451/456.3875	45 11456.7I25	452/457.2875	4521457.8875
451l456.39375	45 11456.71875	4521451.29375	4521457.89315
45 11456.40625	4511456.13 125	4521457.48125	4521451.98 125
45 11456.4125	45 11456.7375	4521451.4815	4521457.9875
451l456.41875	45 11456.74375	4521457.49375	4521457.99375
45 11456.45625	45 11456.75625	452.53125 (unpaired)	4621467.18125
45 11456.4625	45 11456.7625	452.5375 (unpaired)	4621467. I875
45 11456.46875	45 *11456.76815*	452.54375 (unpaired)	4621467. I9315
45 11456.48I25	452/457.03 125	4521457.63 125	4621461.45625
4531456.4815	4521457.0375	4521457.6375	4621467.4625
451/456.49375	4521457.04375	4521451.64375	4621467.46815
45 11456.50625	4521457.05625	452/457.65625	4621467.48125
451/456.5125	452/457.0625	4521457.6625	4621461.4875
45 11456.51875	452/457.06875	4521451.66875	4621467.49375
451/456.55625	4521457.08I25	452/457.68I25	4621467.50625
451/456.5625	4521457.0815	452/457.6875	4621467.5125
4511456.56875	4521451.09375	4521457.69375	4621467.5 *I815*

(c) ***Group*** *A2* ***Freyucncics.*** The Industrial/Business Pool frequencies in Group **A2** are available nationwide on a coordinated basis, pursuant § 90.35(b)(2) and §90.175(b) as follows:

(I) Group **A2** frequencies are available tor voice and non-voice operations on a co-primary basis. Base. mohile or operational fixed stations will be authorized on Group A2 frequencies. Fixed stations may be licensed as mobile.

(2) Low power operation will be authorized nationwide on Group **A2** frequencies

(i) The maximum ERP for low power operation on these frequencies is as follows:

Operation	Low side of frequency pair	High side of frequency pair
Operational Fixed or Base	20 watts	6 watts
Mobile	6 watts	6 watts
Portable	2 watts	2 watts

(ii) The maximum antenna height for low power fixed stations will be 23 meters (75 feet) above ground.

(3) The Industrial/Business Pool Group **A2** Low Power Frequencies are as follows:

451/456.23125	4511456.53 125	4521451.40625	4521451.85625
451/456.2375	451/456.5375	4521451.4 I25	4521457,8625
45 11456.24375	45 11456.54375	4521457.4 I875	4521457.86875
4511456.33 I25	45 11456.63125	*4521451.50625*	
451/456.3375	451/456.6375	4521457.5125	
451/456.34375	45 11456.64375	14521457.51875	

4511456.43125	4521457.30625	4521457.75625	
45 11456.4375	4521457.3 125	4521457.7625	
453i456.44375	4521457.3 I875	4521457.76875	

462/467.20625	4621467.28125	4621467.35625	4621461.43125
4621467.2 125	4621461.2815	4621467.3625	4621467.4315
4621467.21815	4621467.29375	4621467.36875	4621467.44375
4621467.23 I52	4621467.30625	4621461.38 125	
462/467.2375	4621467.3 I25	462/467.3875	
4621467.24375	4621467.3 I875	4621467,39375	
4621467.25625	4621467.33 I25	4621461.40625	
4621467.2625	4621467.3375	4621467.4125	
4621467.26875	462/467.34375	4621467.4 I875	

(c) Group *C* ***Frequencies.*** The Industrial/Business Pool frequencies in Group C are available nationwide for non-coordinated itinerant use as follows.

(I) Group C frequencies are available for voice and non-voice operations on a co-primary basis. Only mobile operations will be authorized on Group C frequencies. Stations may operate at fixed locations for a temporary period of time. No stations operating at a permanent fixed location will be authorized on Group C frequencies.

(2) Operation on these frequencies is limited to 6 watts effective radiated power for fixed or mobile units and 2 watts ERP for portable units. Stations operating at fixed locations for a temporary period of time will be limited to an antenna height of 7 meters (20 feet) above ground.

(3) Thc frequencies in Group C that are subject to the provisions of §90.35(b)(67) will not be available for itinerant use until the end ofthc freeze on the filing of high power applications for 12.5 kHz offset channels in the 460-470 *MHr* band.

(4) The Industrial/Business Pool Group C **Low** Power Frequencies are as follows:

46 11466.03125	461/466.15625	4611466.28125	462.8375 (unpaired)
461/466.0375	461/466.I625	461/466.2875	462/467.8625
46 11466.04315	4611466.16875	46 11466.29375	4621467.8875
461/466.05625	461 1466.I 8125	4611466.30625	462/467.9125
461/466.0625	4611466.1875	4611466.3 125	4641469.48 I25
46 I1366.06875	4611466.19375	461/466.3 1875	4641469.4815
4611466.08125	461/466.20625	4611466.33125	4641469.5 125

461/466.0875	46 11466.2125	46 11466.3375	464/469.51875
4611466.09375	4611466.2 I815	4611466.34375	464469.53 125
461/466. I0625.	461/466.23 125	46 11466.38628	4641469,5375
4611466.1 125	46 11466.2375	4611466.3625	4641469.5625
4611466.1 **1875**	46 11466.24375	46 11466.36875	4641469,56875
4611466.13125	46 11466.25625	462.7625 (unpaired)	
461/466. I375	**461/466.2625**	462.7875 (unpaired)	
4611466.14375	46 11466.26875	462.8125 (unpaired)	

(f) Group *D* ***Frequencies.*** The Industrial/Business Pool frequencies in Group D are available for central station alarm operations on a coordinated basis, pursuant to § 90.35(b)(2) and §90.175(b).

(1) Base, mobile or operational fixed stations will be authorized on Group D frequencies. Fixed stations may be liccnsed as mobile.

(2) Group D frequencies subject to § 90.35(c)(63) are limited to central station alarm use within the urban areas described in § 90.35(c)(63). Outside the urban areas described in § 90.35(c)(63), Group D frequencies subject to § 90.35(c)(63) are available for general Industrial/Business use on a coordinated hasis. pursuant to § 90.35(b)(2) and $90.175(b).

(3) Group **D** frequencies subject to § 90.35(c)(66) are limited to central station alarm use nationwide.

(4) Operation on Group D frequencies is limited to 2 watts output power for mobile, base or operational fixed stations. Fixed stations used for central station alarm operations may utilize antennas mounted not more than 7 meters (20 feet) above a man-made supporting structure, including antenna structure.

(5) The Industrial/Business Pool Group **D** Low Power Frequencies are as follows:

4601465.90625	4601465.95625	46 11466.00625
360i465.9125	4601465.9625	4611466.01 25
4601466.91 875	1601465.96875	4611466.01 875
460/465.93125	460/465.98125	
4601468.9375	4601465.9815	
4601465.943 75	4601465.99375	

(g) *Low* ***Power*** *Public Safety Frequencies.* The frequencies in the Public Safety Pool Low Power Group are availablc nationwide on a coordinated basis. pursuant to § 90.20(c)(2) and § 90.175(b).

(I) Base. mobile or operational fixed stations will he authorized on Public Safety Low Power frequencies. Fixed stations may be licensed as mobile.

(2) Operation on these frequencies is limited to 6 watts effective radiated power for base, mobile or operational fixcd stations and 2 watts ERP for portable units. **A** maximum antcnna height of 7 meters (20 feet) above ground is authorized for fixed stations.

(3) The Public Safety Pool Low Power Frequcncies are as follows:

4531458.03125	4531458.13125	4531458.95625	460/465.53125
453/458.0375	453/458.1375	4531458.9625	4601465.5375
453/458.04375	4531458.14375	4531158.96875	4601465.54378
4531458,05625	4531458.88125	4531458.98125	4601465.58625
4531458.0625	4531458.8875	4531458.9875	4601465,5625
4531458.06875	453/458.89375	4531458.99375	4601465.56875
4531458.08 125	4531458.90625	4601465.48125	
453/458.0875	4531458.9125	4601465.4875	
453/458.09375	4831458.91875	4601465,49375	
453/458.10625	4531458.93 125	4601465.50625	
4531488.1 125	4531458.9375	4601465.5125	
4531458.11875	4531458.94375	4601465.5 1875	

(h) Unless otherwise nored, the following conditions apply to all low power frequencies:

(1) Except for itinerant operations on Group *C*, wide area operations will not be authorized. The area of normal day-to-day operations will be described in the application in terms of maximum distance from a geographic center (latitude and longirude).

(2) **A** hospital or health care institution holding a license to operate a radio station under this pan may operate a medical radio telemetry device with an output power not to exceed 20 milliwatts without specific authorization from the Commission. All licensees operating under this authority must comply with the requirements and limitations set forth in this section.

(3) No limit shall be placed on the lengrh or height above ground level of any commercially manufactured radiating transmission line when the transmission line is terminated in a non-radiating load and is routed at least 7 meters (20 feet) interior to the edge of any structure or is routed below ground level.

(4) Sea-based stations may utilize antennas mounted not more than 7 meters (20 feet) above a man-made supporting structure, including antenna structures.

(5) Continuous carrier operations arc prohibited on these frequencies

(6) Unless specified elsewhere in this part. licensees as of August 5. 1999, licensed for operations with an emission designator wider than 11.25 kHz on low power frequencies that are subject to an authorized bandwidth of 11.25 kHz, may obtain primary status with respect to co-channel licensees by supplying their coordinares to the Commission. These licensees will continue to operate on a secondary basis with respect to adjacent channel licensees. Additionally, these licetisees may continue to operate with an authorized bandwidth wider than 11.25 kHz on such low power frequencies. subject to the provisions of § 90.209(b) of this chapter.

(7) Unless specified elsewhere in this part, licensees as ***of*** August 5, 1999, licensed for operations with an emission designator wider than 11.25 kHz on frequencies that are subject to an authorized bandwidth of 11.25 kHz, which are not low power frequencies, may obtain primary status with respect to co-channel licensees by modifying their license to low power frequencies, supplying their coordinates to the Commission. and othenvise complying with the conditions of paragraphs (b) through (g) of this section. These licensees will continue to operate on a secondary basis with respect to adjacent channel licensees. Additionally, these licensees may continue to operate with an authorized bandwidth wider than 11.25 kHz on such low power frequencies, subjcct to the provisions of § 90.209(b) of this chapter.

(8) Applicants proposing to operate with an authorized bandwidth wider than 11.25 kHz, on low power frequencies that arc subject to **an** authorized bandwidth of 11.25 kHz, may be licensed on a secondary, non-interference basis. Such applicants are subject to the conditions of paragraphs (b) through **(g)** of this section and the provisions of § 90.209(b) of this chapter.

APPENDIX C
LIST OF COMMENTERS

Comments
AES Corporation
Allina Health Systems
American Mobile Telecommunications Association. Inc
American Petroleum Institute
American Water Works Association
Association of American Railroads
Central Station Alarm Association
Cook County Hospital
Dataradio COR, Ltd.
Enalasys Corporation
Hexagram, Inc.
The Industrial Telecommunications Association, Inc.
The Land Mobile Communications Council
Motorola
Pacific Crest Corporation
Personal Communications Industry Association
Philips Medical Systems
Spacelabs Medical, Inc.
The Toro Company
United Telecom Council
Trimble Navigation Limited

Reply Comments
American Hospital Association Task Force on Medical Telemetry
American Petroleum Institute
Central Station Alarm Association
Dataradio
Enalasys Corporation
Hexagram, Inc.
Land Mobile Communications Council
Pacific Crest Corporation
Philips Medical
'The Toro Company
Trimble Navigation Limited
United Telecom Council

Ex Parte
Hexagram. Inc